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EVALUATION OF HEALTH INSURANCE DEMONSTRATIONS IN KAZAKHSTAN: DZHESKASGAN AND SOUTH KAZAKHSTAN OBLASTS

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ABSTRACT

At the request of Kazakhstan's central Ministry of Health, Abt Associates Inc. evaluated two health insurance demonstrations—one ongoing and one planned—in two oblasts in the republic. The evaluation covered four areas concerning health insurance and related health policy changes:

- the adequacy of financing, or to what extent a new employer payroll contribution and other sources of revenue would ensure adequate financing of the health care system;
- changes in efficiency, or the effect of the health insurance structure and related payment policies and organizational changes on the efficiency with which services are provided;
- the impact on quality of care, or the effect of changes in financing, payment, and quality assurance programs on the quality of service delivery and ultimately on health status; and
- the equity of access to care, or the effect of the new system on what was one of the strengths of the old system—relative equity of access to services by various socioeconomic groups.

The evaluation found that parts of these demonstrations can serve as models for health care reform for the rest of the country and that a number of specific design features can be used to help inform the debate about the health insurance reform law under consideration by the parliament. To strengthen the existing demonstration models, especially in the context of national reform, a series of 40 recommendations and options for action were developed for financing, payment methods and efficiency, quality of care, and equity of access to care. Several areas for potential short-term technical assistance also were identified, including development of an improved legal framework for innovative demonstration sites in the future, intensive training activity, and model hospital cost and information systems.

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The team wishes to especially recognize several health sector leaders and providers without whose help the evaluation would not have been completed. Dr. Maksut Karimovich Khulzhanov, federal Deputy Minister of Health, initiated the idea of an evaluation and provided invaluable time and insight that provided team members with necessary policy context for the evaluation. Dr. Khulzhanov also provided key leadership in planning and holding the followup workshop in Almaty in June of 1994.

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In South Kazakhstan oblast, Dr. Andrey Vladimirovich Novokov, the oblast's First Deputy Minister of Health, opened our eyes to many innovative and progressive initiatives under way in the oblast under his leadership.

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The work was intellectually challenging but rewarding for the team. In the process, we were richly rewarded in other ways through new friendship, the exchange of new ideas, and a better acquaintance with a nation that is struggling to preserve the best aspects of its old health system while recognizing the need for many changes and improvements. Kazakhstan's health sector, like the country itself, has a bright future ahead. It is the team's hope that this evaluation will contribute to the realization of the better future ahead.

Many individuals from the Health Financing and Sustainability Project (HFS) contributed to the preparation of the technical assistance work, as well as to the completion of this document. Gerald Wein, HFS Project Director, provided able project leadership and help at each step of the process. The hospitality and friendship he also demonstrated to our Kazakhstani counterparts in early 1994 clearly accelerated important communication linkages necessary for good team work. Charlotte Leighton provided insight, helpful reviews, and technical direction, both before and after the team's work on site. Jim Knowles provided a careful review and many good comments on the initial drafts. Michael Trisolini of Boston University and Deborah McFarland of Emory University reviewed and commented on early drafts. They both conducted a very thorough and insightful review, which in the end helped greatly improve the quality and final version of this report. Ken Currier provided superb logistical and managerial support in the initial stages and Alex Jones provided consistent and excellent logistical throughout. Denise Lionetti simplified complicated situations and helped prevent potentially messy ones. Linda Kean and Denise DeRoeck provided excellent editing and demonstrated great patience with our inflexibilities.

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ACRONYMS

APTK	Russian-language equivalent of primary care group practices
DRG	Diagnosis-Related Group
FEZ	Free Economic Zone
FFS	Fee for Service
GDP	Gross Domestic Product
HFS	Health Financing and Sustainability Project
HI	Health Insurance
HMO	Health Maintenance Organization
MOH	Ministry of Health
MHI	Mandatory Health Insurance
NEM	New Economic Mechanisms
NIS	Newly Independent States
OECD	Organization for Economic Cooperation and Development
PCG	Primary Care Group
TMO	Territorial (regional) Medical Organization
USAID	United States Agency for International Development
VHI	Voluntary ("private") Health Insurance

PREFACE

In December 1993 representatives from the U.S. Agency for International Development (USAID) and from Abt Associates Inc. met with health policy leaders in Kazakhstan and discussed areas of possible collaboration under Abt Associates' Health Financing and Sustainability (HFS) Project. There was strong interest in examining two demonstration areas in Kazakhstan where new health insurance financing and payment policies either had been implemented or was planned. These demonstrations were especially important in the context of health sector reform legislation under consideration by the national parliament.

In March 1994, a two-day initial planning meeting was held in Washington with individuals from the Abt team and the central Ministry of Health as well as decisionmakers from the demonstration sites. Before the visits to the two demonstration sites, the team spent several days in Almaty in order to examine national information and to meet with leaders of the Kazakhstan health sector. The team spent 13 days in Karajal and Zhairem, and 7 days in Chimkent, meeting with local leaders, experts, managers, physicians and nurses, economists, and decisionmakers at each site. The team also examined clinical and economic data and developed computer models for analysis and simulation.

The team focused on evaluating a parastatal health insurance fund demonstration underway since early 1993 in two towns within the Dzheskasgan oblast. The analysis and findings then were applied to a demonstration scheduled to begin July 1, 1994, in an area within South Kazakhstan oblast comprised of Chimkent city and three neighboring rural rayons. The health insurance funds are financed by a new 4–5 percent employer-based payroll tax, with the state paying a flat, capitated rate of payment for other population groups such as the unemployed, elderly, and disabled.

This report summarizes the team's findings, which are often presented in the form of ideas and possible options for action. Given the short timeframe under which this assignment was conducted, the technical assistance aims of the assignment, and the government's urgent need for answers, the resulting report is not a comprehensive and integrated study. Instead, it should be viewed as a working document which provides background information, options, and recommendations to be used in refining the design of further reform of the health sector.

EXECUTIVE SUMMARY

In December 1993 representatives from the U.S. Agency for International Development (USAID) and from Abt Associates Inc. met with health policy leaders in Kazakhstan and discussed areas of possible collaboration under Abt Associates' Health Financing and Sustainability (HFS) Project. There was strong interest in examining two demonstration areas in Kazakhstan where new health insurance financing and payment policies either had been implemented or was planned. These demonstrations were especially important in the context of health sector reform legislation under consideration by the national parliament.

Abt Associates completed an evaluation of these health insurance demonstration activities in April 1994. The project team was international in scope: team leader Jack Langenbrunner (U.S.), Igor Sheiman (Russian Federation), and Samir Zaman (Bangladesh) were joined by several Kazakhstani nationals: Sasha Okonechnikov, M.D., and Sarbi Arystanova, both of the federal Ministry of Health; and Sergi Kim, M.D., of the Chimkent City oblast hospital. The team members had expertise across several disciplines, including finance, economics, medicine, data analysis, public policy, and public health.

The team focused on evaluating a parastatal health insurance fund demonstration underway since early 1993 in two towns within the Dzheskasgan oblast. The analysis and findings then were applied to a demonstration scheduled to begin July 1, 1994, in an area within South Kazakhstan oblast comprised of Chimkent City and three neighboring rural rayons. The health insurance funds are financed by a new 4–5 percent employer-based payroll tax, with the state paying a flat, capitated rate of payment for other population groups such as the unemployed, elderly, and disabled.

FOCUS AND METHODS

Four areas related to health insurance and related health policy changes were examined:

- the adequacy of financing, or to what extent a new employer payroll contribution and other sources of revenue would ensure adequate financing of the health care system;
- changes in efficiency, or the effect of the health insurance structure and related payment policies and organizational changes on the efficiency with which services are provided;
- the impact on quality of care, or the effect of changes in financing, payment, and quality assurance programs on the quality of service delivery and ultimately on health status; and
- the equity of access to care, or the effect of the new system on what was one of the strengths of the old system—relative equity of access to services by various socioeconomic groups.

The methods used in the evaluation included data analysis, development of a computer-based impact and simulation model, surveys of health care providers and consumers, and interviews with experts. The team met with local leaders, experts, managers, health providers, and economists at each site. They collected and analyzed data and developed computer models for analysis and simulations.

FINDINGS AND RECOMMENDATIONS

Financing

The concept of a separate, self-sustaining health insurance fund is a good one, and the general strategy should be supported and expanded. Nonetheless, the payroll contribution approach in Dzheskasgan oblast faces several challenges. First, there is less than full participation by firms, especially smaller ones, and the contributions of many participating firms are not made in a timely manner. These problems stem in part from a high current tax burden, poor collection methods, and general macroeconomic conditions. Also, a new payroll tax can have a deleterious effect on capital formation in general and on smaller businesses in particular. Only about 8 percent of businesses with fewer than 100 employees currently are willing to participate in the experiment in Dzheskasgan oblast. Similar problems could occur in the demonstration site in South Kazakhstan oblast.

The team developed a range of options and recommendations. For example, alternative forms of financing could be developed, such as a value-added tax or a shared employer-employee contribution scheme. Another option is to restructure the hefty 30 percent payroll tax currently collected for the social insurance and pension fund.

The team also found that any new or refined financing options must take into account other factors, including a well-defined benefits package and other sources of revenue such as state-based capitated payments. Government payments have historically been erratic; future payments for specified population groups must be more predictable to allow for health sector planning and necessary organizational changes.

In South Kazakhstan, insurance fund revenues will be managed by intermediary public and private insurance organizations which will contract with providers for delivery of health care services. Some market regulation and ongoing oversight may be necessary to encourage efficient management of these organizations and to ensure that available revenues are used for delivery of needed and appropriate health care services.

Finally, both demonstration sites must consider and develop new sources of revenue, such as nominal copayments for first-time outpatient visits that are not related to "priority services" such as vaccinations and other preventive care. The team provided a specific strategy for initiating limited copayments by providers and facilities in each demonstration site.

The team developed a computer-based model for future analysis and decisionmaking concerning the financing of care. Electronic copies of these impact models were translated into Russian and left with leaders in both sites. Training sessions also were held to familiarize staff with the use of these models.

Efficiency

A range of indicators was used to measure two types of efficiency: *allocative efficiency*, or the use of funds across settings; and *technical efficiency*, or the use of funds within specific provider settings, such as a polyclinic or hospital.

New methods of payment and management in the Dzheskasgan oblast demonstration site have promoted structural changes that point to increased allocative efficiency and greater cost-effectiveness in the general provision of care. This is due in large part to changes and improvements in the incentives for primary care providers, such as the use of primary care fundholding approaches ("APTK" in Russian). For example, the ratio of general practitioners to specialists has improved from 1:5.2 to 1:3; the share of visits to primary care physicians has improved from 37 percent of total visits to 51 percent.

The effects on technical efficiency have been more mixed. Hospital admissions have decreased by 26 percent, as has the number of patient days. At the same time, hospital productivity has decreased due to the inflexibility of hospital managers, who have failed to cut staff in response to drops in admissions and changes in case mix.

In the South Kazakhstan oblast demonstration site, an emergent private "voluntary" health insurance sector has developed methods for selective contracting as well as for performance-related payments for physicians and hospitals. Voluntary insurers also have generated efficiencies through tougher controls on hospital lengths of stay and through the use of management information and monitoring systems. These health insurance organizations and practices have spurred increases in the productivity of labor, enhancement of provider skills, decentralization of management, and increases in consumer choice. Nevertheless, voluntary coverage extends to a relatively small portion of the population—currently less than 10 percent.

Other changes in this oblast have promoted increased efficiency in the delivery of care, including greater autonomy of hospitals, polyclinics, and individual physicians; small-scale attempts at corporatization of hospitals and polyclinics; and an innovative family doctors program.

Several issues will need to be addressed in the new health insurance demonstration. New methods of payment need to be introduced for both public- and private-pay patients. New incentives are necessary to better emphasize primary care and outpatient care. Finally, the interaction and responsibilities of both the public and private health sectors will need to be better defined and managed.

Quality of Care and Equity of Access

The quality of acute care has improved to some extent in the Dzheskasgan demonstration area, in part because of increased provider salaries, new payment incentives, new insurance-based quality assurance programs, and the use of more specialized care facilities such as day-care centers (instead of hospitals) for palliative care. Such improvements have been offset, however, by a deterioration in the availability in equipment, supplies, and pharmaceuticals. There is some evidence of improvement in access to care and patient satisfaction, as measured by waiting times for physicians and lab tests and by consumer surveys.

Preventive services do not seem to be increasing, and there is evidence that some are decreasing, especially vaccinations and contraception services. The team concluded that these areas may need to be monitored in the future. The team further recommended that specialized settings of care be created in the future and that separate set-aside revenues be established for public healthrelated programs.

In the South Kazakhstan demonstration area, the influence of voluntary health insurance has led to an improvement in the quality of care for some by increasing the availability of pharmaceuticals and diagnostic tests, increasing consumer choice, and establishing tougher quality standards. The challenge will be to design a mixed public and private insurance sector that can provide high-quality care and greater consumer choice for all, not just for those who can afford to opt out of the public system. This will necessitate restructuring and better management of private markets, including improving competition among voluntary insurers and guaranteeing availability and renewability of private insurance benefits. It also will demand restructuring the public system in more dramatic ways to ensure that consumers have choice and that everyone receives defined minimal levels of access and quality.

In both oblast demonstration areas, the team recommended that quality assurance functions be restructured as separate legal entities to improve independence, flexibility, and innovation. The team also recommended that quality assurance activity be refocused away from process-oriented patient record reviews to outcomes-based surveillance across facilities and areas.

CONCLUSIONS

The South Kazakhstan and Dzheskasgan oblast demonstration areas can serve as models for general health care reform in Kazakhstan. The general approach could first be extended throughout the oblast and then implemented on a national level. The findings could be used to help inform the debate about the health insurance reform law currently under consideration by the national parliament.

To strengthen the existing demonstration models, especially in the context of national reform, a series of 40 recommendations and options for action have been developed in four areas: improved financing; payment methods and efficiency; quality of care; and equity of access to care. Several areas for potential short-term technical assistance also have been identified, including development of an improved legal framework for innovative demonstration sites, intensive training activity, and model hospital cost and information systems.

The team briefed USAID/Almaty and Ministry of Health (MOH) leaders in Almaty before departing the country. Their findings and recommendations will complement site demonstration work under Abt Associates' Zdrav*Reform* health care reform project, currently underway.

1.0 INTRODUCTION

In December 1993, Marty Makinen, a health economist and Technical Director of the Health Financing and Sustainability (HFS) Project, negotiated a scope of work and schedule for a technical assistance assignment with the Kazakhstan Ministry of Health (MOH) and USAID/Almaty.[1] The technical assistance was to help evaluate the experience of a health insurance demonstration in Dzheskasgan oblast and to evaluate plans for initiating a health insurance program in South Kazakhstan oblast.

This report is based on the evaluation conducted in April 1994. A team of specialists from Abt Associates Inc., in conjunction with the leadership of the Kazakhstan MOH and the South Kazakhstan MOH, visited Dzheskasgan oblast and South Kazakhstan oblast. Their purpose was to examine and evaluate the Health Insurance (HI) demonstration, which had been in place since 1993 in the Zhairem-Atasou Free Economic Zone (FEZ), and the planned health insurance program in Chimkent. The team comprised specialists from several disciplines, including finance, economics, medicine, data analysis, public policy, and public health, and from several countries, including Kazakhstan, Russia, Bangladesh, and the United States.

In March 1994, a two-day initial planning meeting was held in Washington with individuals from the Abt team and the central Ministry of Health as well as decisionmakers from the demonstration sites. Before the visits to the two demonstration sites, the team spent several days in Almaty in order to examine national information and to meet with leaders of the Kazakhstan health sector. The team spent 13 days in Karajal and Zhairem, and 7 days in Chimkent, meeting with local leaders, experts, managers, physicians and nurses, economists, and decisionmakers at each site. The team also examined clinical and economic data and developed computer models for analysis and simulation.

The team focused on four areas related to health insurance and related health policy changes:

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- the equity of access to care, or the effect of the new system on what was one of the strengths of the old system—relative equity of access to services by various socioeconomic groups.

The team has developed several findings and recommendations which were provided to Deputy Minister Kulzhanov and to USAID.

The HFS project, funded by USAID, provides technical assistance, conducts applied research, and disseminates information about health financing and organization in developing countries. In October 1993, a buy-in was agreed from USAID's NIS (Newly Independent States) Task Force to the HFS Project. The buy-in calls for technical assistance to two of the countries of Central Asia in the area of health financing, economics, and management.

The remainder of this report is organized as follows. Section 2 provides an overview of both current demonstration sites, including a brief review of key events and a discussion of key design and implementation issue areas.

Sections 3, 4, and 5 present methods and findings along the areas of focus: the adequacy of financing, changes in efficiency, and the impact on the quality of and the equity of access to care. Each section presents a number of methods for obtaining and analyzing information, which were employed by individual members of the team to test hypotheses and consider alternative explanations. The sections then present the team's findings in each of these areas for each demonstration area.

Section 6 presents the team's conclusions, recommendations, and options for action. This section could be particularly useful for further assistance with the reforms, particularly the new NIS technical assistance project awarded by USAID to Abt Associates Inc. in early 1994 to assist in development of several intensive demonstration areas in the NIS countries over the next three to five years.

1.1 BACKGROUND ON KAZAKHSTAN AND THE HEALTH SECTOR

Kazakhstan has enjoyed a tradition of universal access to health care services, as well as considerable investment in curative medicine, prevention, and water and sanitation, which have been beneficial to the general health of the population. Over the last five to ten years, however, socioeconomic and environmental problems have severely strained both the health of the population and the health care system.

Kazakhstan is a study of contrast and diversity. While the nation comprises fewer than 17 million people, it is extremely diverse geographically and ethnically (see World Bank, 1993). Kazakhstan has the second largest land mass in the former Soviet Union and five times the land mass of France with less than a third the population. Kazakhstan has mountains and fertile valleys, as well as large areas of dry, largely barren steppe. It has large endowments of precious metals and oil reserves thought to equal those of Saudi Arabia. Kazakhs comprise the largest segment of the population with just above 40 percent; Slavs make up just less than 40 percent; and Germans, Koreans, and others make up the rest (World Bank, 1993).

Exhibit 1-1 provides some of the latest available social and demographic data, including a comparison with other selected countries and with the average for 24 Organization for Economic Cooperation and Development (OECD) countries.

EXHIBIT 1-1
DATA ON KAZAKHSTAN AND SELECTED COMPARISONS
(1991, unless otherwise indicated)

	Year (if not 1991)	Kazakhstan	OECD (Average)	Russian Federation	Turkey	West Germany	United States
DEMOGRAPHIC							
Population (millions)		16.8		148.7	57.3	80.1	252.0
Percent of the population over age 60	1990	10.0		17.0	7.0	17.0	20.0
Per capita GDP ($ US)		2,470.0		3,220.0	1,780.0	23,650.0	22,240.0
Health spending as % of GDP	1990	4.4		3.0	4.0	8.0	12.7
INFRASTRUCTURE							
Physicians per 1,000 population	1988-92	4.2	2.4	4.7	0.7	2.7	2.4
Ratio of GPs to physicians		0.13			0.93	0.68	0.15
Ratio of nurses to physicians	1988-92	3.0			1.5	1.7	2.8
Hospital beds per 1,000 population	1985-90	13.6	9.2	13.8	2.1	8.7	5.3
HOSPITAL RESOURCE USE							
Admissions as % of population	1990	22.0	16.2		5.6	20.9	13.7
Occupancy rates (somatic)	1990	77.8			57.0	86.4	66.8
Average length of stay (days)		17.0	15.7		6.6	15.2	9.1
PATTERNS OF SPENDING							
Hospital (%)	1990	64.3	46.1		19.1	36.6	46.2
Ambulatory (%)						28.0	29.4
Pharmaceuticals (%)			13.8			21.3	8.1
OUTCOMES							
Crude birth rate per 1,000 live births		21.0	14.0	12.0	28.0	10.0	16.0
Crude death rate per 1,000 people		8.0	9.0	11.0	7.0	11.0	9.0
Infant Mortality rate per 1,000		32.0	9.7	20.0	15.0	7.0	9.0
Life expectancy:							
Males	1989	63.9	72.6		64.1	72.6	72.0
Females	1989	73.1	78.8		68.4	79.0	78.8

Sources: OECD, 1993; World Bank, 1993; Kazakhstan Ministry of Health, 1994.

Life expectancy in Kazakhstan is roughly 63.9 years for males, 73.1 years for females. The infant mortality rate, at 32 per 1,000 live births, is high for a country with such a highly developed human resource base, although it is reportedly lower than that of some other Central Asian republics. The leading causes of death are cardiovascular diseases, cancer, and respiratory diseases. Epidemic diseases (cholera, plague, typhus) are well under control, except for tuberculosis which is prevalent among adolescents and young adults. Preventable childhood diseases are thought to be under relative control through immunization (World Bank, 1993).

The health sector reflects the rational planning and hierarchical structure found throughout the health system of the former Soviet Union. In urban areas, each individual is assigned to a clinic and has a primary care physician who practices within that clinic; in rural areas, there is a basic health unit of one or more physician-extenders (e.g., feldshers or nurses) and some limited supply of medicines. In general, there is no consumer choice, nor are there any private solo practitioners or private clinics. Patients need a referral to move to a higher level within the system. Depending upon the seriousness and complexity of a patient's condition, (s)he would be referred progressively to better equipped facilities—local hospitals, a central rayon (district) hospital, and an oblast-level hospital.[2] Hospitals at each level have both inpatient and outpatient (polyclinic) facilities associated with them. There also are a limited number of "national" centers of research and treatment for both inpatient and outpatient care.[3] ***Exhibit 1-2*** provides a breakout of institutions at each level for Kazakhstan.

EXHIBIT 1-2
REFERRAL STRUCTURE IN THE HEALTH SECTOR IN KAZAKHSTAN

LEVEL	FACILITY	POPULATION SERVED
1	5,108 Feldshers–midwife stations	700-1,000
2	1,127 Ambulatory or rural medical centers/830 small cottage hospitals (25-30 beds)	1,000-5,000
3	217 Central region hospitals (200-300 beds each): — rural areas, with outpatient and specialist facilities — urban areas: 30 city hospitals	
4	Oblast level — regional medical institutions	
5	Republican medical institutions — highly specialized and research institutions	

Source: Laurisden, 1992.

There are a total of 19 oblasts in the country. Oblasts can be considered a geographic and politico-economic unit roughly equivalent to a U.S. state.

A more detailed discussion of the Soviet structure and the Kazakhstani health system can be found elsewhere (e.g., Schieber et al., 1992; Laurisden, 1992).

Historically, the system has been financed through a centralized "top-down" bureaucratic allocation process, based on national budgets formulated and passed by the central legislative and policymaking bodies.

The share of the region's GDP devoted to health has declined precipitously since the 1980s, falling from 6 percent of GDP to just over 3 percent for the Newly Independent States (NIS) as a whole. In Kazakhstan, spending as a percent was 3.3 percent of GDP in 1990, but it is estimated to have dropped in real terms to 1.6 percent in 1992. This figure is extremely low compared to expenditures in OECD countries or in other countries with comparable levels of per capita income (OECD, 1993). The economic decline suffered by Kazakhstan (and most other parts of the NIS) over the past several years also has caused a reduction of locally generated tax revenues,[4] the result of which is an emerging funding crisis in health services.

Furthermore, the Soviet approach to health care delivery did not encourage the efficient use of resources by providers or among them. This was due in part to the fact that the system allocated resources based on traditional production-input measures, such as occupancy rates and numbers of staff and beds, rather than on actual services provided, the relative complexity of those services, or (ultimately) changes in health outcomes. An emphasis was placed on quantitative rather than qualitative goals. The resulting inefficiency can be seen, for example, in the data in *Exhibit 1-1* on the average number of physicians per 1,000 population (4.2 versus 2.4 for OECD countries), beds per 1,000 population (13.6 versus 9.2 for OECD countries, 4.9 for middle-income countries, and 8.4 for upper-income countries), and average length of stay in somatic hospitals, which at 17 days is higher than the 15.7 days for OECD countries and higher than the nine-day average for upper-income countries (11.9 days for Canada and 9.1 days for the United States).[5] Part of this is attributable to the relatively extensive health needs of the population as reflected in higher incidences of morbidity and rates of mortality. The population of Kazakhstan also faces low living standards, difficult environmental and ecological problems, low population density and long distances between populated areas, and problems of transport and communication.

Nevertheless, there continue to be disincentives for efficient use of resources which exacerbate the general problem of underfunding. For example, because hospitals receive budgets based on numbers of beds, hospitals are discouraged from decreasing excess bed capacity and from cutting back on other associated hospital resources. Government-set bed-occupancy standards also create disincentives for accepting referrals from outpatient clinics (polyclinics) and incentives for keeping patients longer than necessary.[6]

A February 1994 report from the federal Ministry of Finance stated that economic activity for the country had declined 32 percent in the previous year.

The international experience shows a correlation between average length of stay and availability of hospital beds: the higher the bed density per 1,000 population, the greater the propensity to keep patients hospitalized (OECD, 1993).

Longer lengths of stay also can be attributed to the relative lack of modern technology, the absence of tertiary care, and the low productivity of staff.

Another area of continuing concern is the bias for curative care over primary care and the relative efficiency of physicians practicing in the polyclinics. Less than 15 percent of the country's physicians are general practitioners who provide primary care (compared with about 70 percent in Germany and 56 percent in Canada).[7] Physician-care budgets are developed on the basis of the "capacity of the polyclinic," which is determined by staff size and the *potential* number of patients the staff could serve. Polyclinics develop by increasing their number of low-paid, salaried physicians. The lack of competition and choice and the lack of incentives to increase income tend to encourage physicians to act as indifferent dispatchers, referring patients to hospitals (Sheiman, 1992). About 30 percent of first visits to polyclinics are referred to hospitals,[8] compared to 8.6 percent in the United Kingdom and 5.2 percent in the United States (Sandier, 1989). The hospital admission rate for Kazakhstan is 22 percent of the population, compared to 16.2 percent on average for all OECD countries—a difference attributable in part to the higher referral rate.

Overall, a relatively high share of resources are allocated to more expensive inpatient care—64.3 percent in 1990 and 73.8 percent in 1992—according to April 1994 Ministry of Health estimates. A comparative indicator for OECD countries—hospital use plus long-term care—is around 50 percent.

There are other health sector problems, among them:

- Most facilities are run-down or dilapidated.
- The quality of care is low, as measured by outmoded medical practices and equipment.
- There are serious shortages of supplies and pharmaceuticals, simultaneous with inappropriate use of drugs (polypharmacy).[9]

The Kazakhstani government has acknowledged the need for reform to address these problems. The most recent indication is the report of the Kazakhstan Ministry of Health (1994) documenting the problems of underfunding and poor performance in the health sector. The government instead seeks to: a) increase the level of resources available for spending on health, b) allocate available resources more efficiently, and c) relieve government budget pressures and allow for greater self-sustainability in the financing of care.

1.2 HEALTH REFORM AND HEALTH INSURANCE IN KAZAKHSTAN

In early 1992, the national parliament enacted a new law on "Protection of the Population's Health." This law together with a draft concept and policy paper envision a health system fundamentally different from the current system. The new health law and policy give priority to primary health care and seek to change both the management and financing of care. Decisionmaking is to be decentralized and private health care and consumer choice is to be introduced.

Primary care physicians are generally referred to as "therapists" or "internists" in Kazakhstan; these are equivalent to what are called "general practitioners" in the United States.

Based on analysis and discussions in two oblasts (Dzheskasgan and South Kazakhstan).

Currently, pharmaceuticals are free for inpatient care; outpatient costs are borne by direct out-of-pocket payments. Prices recently have been deregulated, creating additional financial barriers.

It was expected that the new system would be implemented as soon as possible through a series of laws, beginning with a law creating a new Health Insurance (HI) system in 1993. A new employer-based payroll tax ("contribution") is to finance the system, with monies coming from the government for special populations such as the elderly, the unemployed, and the disabled. The insurance is to cover a basic package of services, which is not specified in the draft law but is to be defined by the federal Ministry of Health (MOH) and then reviewed and modified periodically. Those individuals who wish to have coverage beyond the basic package are to be allowed to purchase additional voluntary insurance.

The draft law submitted by the MOH was amended by the national legislature to specify that a so-called mandatory health insurance (MHI) fund or organization[10] be set up by each oblast. Each oblast is to develop and manage a separate "off-budget" fund—that is, the fund is to receive special "earmarked" revenues and is to be protected from and independent of the annual budget process. The MHI organization is to collect contributions and to allocate them to local health insurance organizations. Many other details that are not specified in the law can be stipulated by government decree or regulation once legislation is passed.

As of this writing, however, the draft law has not yet been passed, although it continues to be under discussion by the parliament. Nevertheless, a number of local geographic areas have moved to change the financing and structure of health care delivery. The reforms were first initiated in 1989 when the so-called New Economic Mechanisms (NEM) were announced and approved in Moscow under the former Soviet structure. The NEM provided for greater local autonomy and a number of demonstration sites in each of the republics.[11] The focus was to be on three areas of change:

- Restructuring of financing, under which health budgets would be developed differently. A formula of 18 production input categories was replaced by a standard per capita payment based on a mix of measures of resource use[12] and historical trends;
- Organization and management restructuring, through greater autonomy and management systems; and
- Improved technical efficiency in the delivery of care, through improved payments for services within and across facilities.

Throughout this report, mandatory health insurance "fund" and "organization" are used interchangeably since there is no Russian-language counterpart for "fund."

The NEM health sector demonstration sites included St. Petersburg and Kemerovo in Russia, and five different sites in Kazakhstan—two urban rayons (Abai in Karaganda oblast and Ekibastuz in Parlodar oblast) and three rural rayons (Talgar in Almaty oblast, Alakol in Taldy-Kourgan oblast, and Jetygara in Koustanai oblast).

Payments were adjusted according to age (adults versus children) and gender.

By April 1990, under a new minister in Kazakhstan, the NEM demonstration sites had been cancelled, but the general principles of NEM had taken root in an estimated third of the country in terms of greater flexibility of resource allocation, payments to personnel, and some limited management restructuring approaches.[13] In 1992, the Council of Ministers established three oblasts as health sector demonstration areas—Dzheskasgan, South Kazakhstan (including Chimkent), and Kokchetau—extending greater flexibility in terms of financing, payment, and organization of care.

One area of Dzheskasgan oblast—the so-called Zhairem-Atasou Free Economic Zone (or FEZ)—has been conducting a health insurance demonstration since the beginning of 1993. The FEZ includes the towns of Karajal and Zhairem. A state-owned MHI organization has been established by the local health care providers and other authorities using revenues from three sources: a) the traditional government budget allocations for health care services, b) a new payroll contribution from employers, which is currently set at 5 percent, and c) other revenues from donations, etc. The MHI, in turn, comingles these revenues for payment to all providers. The MHI also has developed new payment methods and a quality assurance program. The effect is that the MHI has become both a collector of revenues and a prudent purchaser of services. Together, these actions have been credited with bringing closer many of the desired objectives of health reformers: greater stability and sustainability of funding, efficiency, and improved quality.

In South Kazakhstan oblast, particularly in the city of Chimkent, a number of health reform-related activities have been underway since early 1993. These include:

- The city of Chimkent and three neighboring (more rural) rayons have designed and developed implementing regulations for an MHI fund, to be financed with a proposed new 4 percent employer payroll contribution. The MHI model is proposed to begin July 1, 1994;
- Private market development of "voluntary" health insurance (or VHI) companies that provide supplemental coverage for care through increased consumer choice of providers and increased availability of supplies, equipment, pharmaceuticals, and amenities (e.g., private hospital rooms); and
- Interaction of a new private sector with the traditional government health sector through such things as selective contracting, private pay, small-scale attempts at corporatization of hospitals, and the establishment of new medical businesses.

The Ministry of Finance formally cancelled the NEM altogether in early 1994, in terms of its use in development of annual health care budgets. The minister cited problems of developing meaningful per capita payments in an overall economic climate of hyperinflation and unacceptable measures of change in input prices. The decision is currently under protest by the Ministry of Health.

2.0 STATUS OF THE CURRENT DEMONSTRATION ACTIVITIES IN THE TWO OBLASTS

2.1 DZHESKASGAN OBLAST

The towns of Karajal and Zhairem form the site of the demonstration in this oblast because of a confluence of events and individual initiative. The towns are about 60 km. apart and have a combined population of about 30,000. They are located within the Zhairem-Atasou Free Economic Zone (FEZ), which focuses on mining and ore enrichment. The FEZ designation allows somewhat greater local autonomy—through the local Administrative Council—subject to approval by the central government.[14] The FEZ status also allows some variation from the federal tax code. For example, customs duties are allocated directly to the local FEZ budget rather than to the central government, as is usually the case.

The health insurance (HI) fund was initiated and implemented at this FEZ level, with approval at the oblast and central levels of government. The HI fund uses its revenues to reimburse for care provided by two 200-bed rayon-level hospitals, a children's sanitorium (30 beds), and two polyclinics in the FEZ.

2.1.1 New Economic Mechanisms

The HI fund project should be seen as a "second phase" of health sector reforms initiated in 1989 (see *Exhibit 2-1* for a chronology of health policy reforms in the Free Economic Zone). The reforms were begun at the local level by the "territorial" medical organization (TMO) when the so-called New Economic Mechanisms (NEM) were announced. The NEM were later discontinued at the national level but were continued in the Karajal-Zhairem area because of local interest and initiative by the TMO—though not without several months of discussion and debate by the local Administrative Council.

Following an initial implementation period, the Karajal-Zhairem TMO restructured financing and mechanisms for payment of health care along several significant dimensions:

- Per capita budget allocations are to be held by the TMO and mixed with other funding sources (e.g., charity contributions and out-of-pocket payments for outpatient pharmaceuticals) to create one unified fund for services.

[14] There are four Free Economic Zones in Kazakhstan.

- Revenues are to be spent in three budget categories: personnel salary, fringe benefits (including training), and capital development. The three simplified budget categories allow for greater flexibility in allocating resources to salaries relative to former Soviet regulations. Facility managers have more power to allocate funds at their discretion. Salaries were increased two- to threefold based on negotiations between the TMO and providers.[15] Excess funds at the end of each year are to be distributed to medical staff—a kind of "profit-sharing" arrangement which encourages more prudent use of resources. Distributions are to be based on a formula that included measures of relative base salary, workload, efficiency, and quality performance.
- The TMO established multiple units of primary care groups (PCGs, or APTK in Russian[16]) from the staffs of polyclinics,[17] which are similar to the "fundholder" groups in the United Kingdom in which providers are paid on a capitated basis to provide services to a defined population. The TMO is to reimburse the PCGs for the number of patients treated; for patients that the PCG refers to another facility, the TMO is to reimburse that facility directly. The effect is to encourage primary, outpatient care and to discourage unnecessary referrals either to the hospital or to the next level of facility in the system referral structure.
- Hospitals are to be paid a fixed amount per patient for each patient or illness category. There are only seven or eight categories, one for each clinical department (e.g., pediatrics, oncology, surgery). Rates are based on average bed-day experience (on a facility-specific basis) from 1985 to 1990. While crude, the incentives are in the right direction: payment is to be based on performance (successful completion of treatment), which encourages more appropriate use of resources and promotes more efficient treatment approaches.
- A system of strong administrative controls and monetary "penalties" is to be assessed directly against individual providers in order to increase incentives for better quality assurance.
- A series of contracts were developed and signed between all facilities and the TMO setting out catchment areas for responsibility of care, as well as utilization and quality standards. The TMO, in turn, signed a similar contract with the oblast-level MOH.

In effect, the reforms created a kind of Health Maintenance Organization (HMO) structure, with the TMO serving as the administrative overseer for local providers and facilities. These reforms were implemented fully by the end of 1990 and/or early 1991.

Relative salaries would be based on relative value guidelines developed for physicians, nurses, and other support staff under the former Soviet ministry.

These acronyms are used interchangeably throughout this report.

Primary Care Groups were economic units, but not legally distinct entities. The groups were typically composed of 8-11 staff including a pediatrician, internist, obstetrician/gynecologist, nurses and staff aides.

EXHIBIT 2-1
CHRONOLOGY OF HEALTH POLICY REFORM IN ZHAIREM-ATASOU
FREE ECONOMIC ZONE (FEZ), DZHESKASGAN OBLAST

I. 1989-1990

- New Economic Mechanisms (NEM) established in the USSR
- Ministry of Health Decree about NEM (January 1990)
- NEM implementation initiated in Karajal (March 1990)
- NEM discontinued in most areas by decree; Karajal continues
- "Collective Contracts" signed in Karajal between providers and the local medical association, which changed structure, organization, and payment approaches (October 1990)

II. 1991

- Demonstration approved by Kazakhstan officials at the federal, oblast, and local levels of the Ministry of Health
- Reforms fully implemented (January)
  - moves Karajal to HMO-type model using a primary care group Fundholders approach
  - generally greater local decisionmaking

III. 1992

- Kazakhstan Parliament enacts law on "Protection of the Population's Health," which includes provision on health insurance (January)
- Free Economic Zone established
- Task Force initiated by Ministry of Health and local Administrative Council of FEZ to establish state-run compulsory health insurance (HI) fund (March)
- State Medical Insurance Fund organization established in FEZ (December)

IV. 1993

- Compulsory contribution established at 5 percent of employer payroll based on local FEZ political-business consensus (January)
- HI Fund organization implemented, including new organization and payment changes (March):
  - fee-for-service payments in polyclinics
  - refined case-mix-adjusted payments for hospitals based on protocols for each disease category and bed-day experience
  - new quality assurance program based on clinical protocols

2.1.2 Health Insurance Demonstration Phase

The changes enacted under the New Economic Mechanisms, while successful, were carried out in an environment of deteriorating economic conditions and declining budget allocations from the central parliament and Ministry of Health. Price deregulation and hyperinflation created further budgetary deterioration in real terms. Budget allocations, based on annual discretionary appropriations determined by the legislative body, were unpredictable.

The new draft law enacted by the parliament in early 1992 set out the concept of health insurance funds and called for implementation by January 1993.[18] In part as a response to this initial implementation timeline, the TMO again undertook to establish its own mandatory health insurance (MHI) fund in the FEZ. The MHI was in place by the end of 1992, and implementation occurred in March 1993. The new MHI structure and its policies changed the organization and payment of care in several important ways, including:

- Creation of a new organization, the MHI, separate from the TMO. This separated the collection and management of funds, for which the MHI is responsible, from the actual delivery of health care, which is carried out by the TMO and its providers. The MHI is to collect multiple sources of revenues and set up rules for the prudent purchase of services.
- Creation of a new source of revenue through a 5 percent payroll contribution from all employers in order to create additional funding and to protect the revenue base from destabilizing political decisions on budgetary allocations.[19]
  - The 5 percent rate was established through political consensus at the Administrative Council level; original projections held that the rate should be somewhere between 4 and 9 percent.
  - Funds are comingled with other government revenues.
  - Approximately 7.5 percent of total revenues are used for administrative overhead, with the remainder going to health care services.
- Creation of a standard benefits package of covered services, which was based on all services provided within the previous five years.
- Changes in quality assurance, with the establishment of several hundred treatment protocols by local medical teams, using both process and outcome standards. The protocols are diagnosis-specific and have been developed for both inpatient and outpatient care. The protocols incorporate both federal MOH standards and local practice standards. The MHI, through physician experts on its staff, reviews medical records in polyclinics and hospitals using the protocols as standards. Monetary penalties are levied against the TMO for violations. The TMO, in turn, determines which specific providers are at fault.

As mentioned above, the parliament's January 1992 act was not adopted by the government and is still under debate.

It should be noted that beginning in 1990, the TMO had levied a "voluntary" 35 percent copayment on employers for employees being admitted to the hospital; this amounted to a kind of payroll tax of about 1.7 percent.

- Changes in the method of inpatient care to result in a more refined case-mix payment system. The several hundred protocols developed for quality assurance also are used as payment categories. Protocols included standards for hospital lengths of stay necessary for treatment. Payments per inpatient stay were effectively "capped" based on these bed-day standards, effectively creating levels of reimbursement to which hospitals could "spend-up" for each admission.
- Changes in the payment method for outpatient care from the primary care group "fundholders" to a fee-for-service approach, using a fee schedule of 25 separate services. Fee levels were calculated using measures of complexity, average time, and input costs. These fee levels are expressed in terms of relative values—that is, a certain number of units is attached to each service to specify its relative payment. Total spending for services is capped by a fixed budget. The budget is divided by the number of units to calculate a conversion factor, or standardized rate of payment, for each relative value unit. Actual payment is based on the sum of relative value units for each service. Payment levels are updated periodically to account for changes in treatment patterns and, more often, to adjust for high rates of inflation.

Although the purpose of the MHI is to make participation in the health insurance scheme mandatory for all employers, in practice firms agree to contribute to the MHI by signing contracts with the insurance organization. To date, participation in the MHI has been mainly limited to large firms, and only 8 percent of companies with less than 100 employees currently participate. However, the large employers that do participate employ the vast majority (78 percent) of workers in the area (see Section 3.0).

2.2 SOUTH KAZAKHSTAN OBLAST

The South Kazakhstan oblast has the largest population of any oblast in Kazakhstan, with about 2 million people. About 48 percent of the population lives in urban areas. The city of Chimkent, an industrial area that produces tires and chemicals, refines oil, and processes non-ferrous metals, is the oblast center. Chimkent City has approximately half a million residents.

2.2.1 Health Insurance

The city of Chimkent and three adjoining rural rayons were preparing to implement an employer-based compulsory insurance demonstration during the spring/summer of 1994. Urban areas were to contribute through a 4 percent employer payroll contribution; the "Estonian model" was proposed for rural areas whereby family (private) farms contribute 1 percent of the estimated value of gross output. An earlier attempt to begin compulsory insurance failed when employers refused to make their contributions in the absence of a federal law. This earlier failure, however, did leave oblast health authorities with a complete set of regulations detailing implementation.

The health sector in South Kazakhstan is characterized by the emergence of five privately owned voluntary health insurance (VHI) companies which cover approximately 80,000 individuals. The largest company, Umit, provides coverage for 44,000. Coverage is usually sold through employer groups to pool risk, though individual policies are also sold. The scope of benefits is highly variable, from complete coverage to disease-specific coverage. Prices are based on the scope of coverage, income, and relative risk.

The private insurance companies provide additional coverage in terms of:

- Consumer choice of physicians, hospitals, and specialized care in more sophisticated facilities in other parts of Kazakhstan (e.g., Almaty) or other countries (e.g., United Kingdom). Hospitals and facilities are under contract with these companies to provide care.
- Increased quality and access through separate and often more rigorous quality assurance standards and review. Coverage further allows more supplies, diagnostic tests, pharmaceuticals, and therapies than otherwise. Patients can circumvent the public referral structure if desired. Optional private insurance also provides separate admission desks in polyclinics and hospitals to ensure provider responsiveness.
- Increased amenities such as private hospital rooms and individually prepared meals.

While relatively small in terms of the number of individuals covered, these companies have had an impact on efficiency through aggressive payment methods and utilization management. Approaches vary by company, but include:

- Performance-related payment methods such as physician fee schedules and modified DRG-like payment for inpatient care;
- Savings on patient days due to tougher controls on lengths of stay;
- Use of management information and monitoring;
- Tougher requirements for medical staff skills, such as accreditation;
- Decentralization of management decisionmaking; and
- Better resource allocation through innovative home care programs that allow patients to leave hospitals earlier and receive skilled follow-up care at home.

Under the proposed health insurance demonstration, both state-owned and voluntary health insurance companies would participate in administering payments and overseeing management of the new system. The MHI organization, as in the case of the FEZ demonstration, would receive payroll contributions from employers. For non-working populations such as the elderly, the disabled, and the unemployed, the MHI would receive payments from the government on a capitated basis. Unlike the FEZ demonstration, however, a series of insurance intermediaries would be established. These intermediaries would include both the voluntary companies and at least one state-run organization. Intermediaries would be assigned an exclusive geographic area and would receive a capitated rate for each individual in that geographic location. A 3 percent administrative overhead payment would be included. Assignment would be based on company experience and familiarity with the area. Residual areas would be assigned to state-owned intermediaries.

Intermediaries, in turn, would contract with facilities for care and would negotiate payment methods and rates. They would be at risk for financing all coverage and payment of a benefit package defined by the oblast health department. At the same time, intermediaries would be awarded an exclusive right to sell supplemental coverage in their designated area as an incentive to accept intermediary roles and risks. The oblast MHI organization would monitor and evaluate intermediary performance. The oblast Department of Health would issue insurance licenses and certificates of accreditation for facilities. Quality assurance would be handled primarily at the facility level through chart reviews and peer review groups; intermediaries would have the option of establishing their own quality assurance staffs and processes.

2.2.2 Additional Reform Activities

The oblast Department of Health has initiated other changes. In February 1993, the department was given more autonomy—in effect, full authority over all its facilities—by the central government and was reorganized as a new health department. This allowed it to encourage and stimulate facility-level reforms and to oversee a series of attempts at limited privatization of facilities.

A number of facilities have used a simplified three-line budget[20] under the NEM to increase staff salaries and also to reallocate staff to increase productivity. Deputy administrator positions for economic analysis and finance have been created, and management and information systems have been developed. Modified case-mix systems based on bed-day experience provide administrators information to better allocate resources across departments as well as to improve monitoring of care. For example, one hospital uses a DRG-like system of 175 categories for budgeting and payment purposes. Individual physicians are increasingly "profiled" to examine their relative productivity and quality of care. Department managers in some facilities have been given budgets and greater autonomy over resource allocation decisions. One facility has established an outpatient surgery center to move more surgeries out of expensive inpatient areas to same-day treatment facilities. Post-acute home care has increased at several facilities.

The three categories are salary, food, and pharmaceuticals. These differ from the three categories in the FEZ demonstration (salary, fringe benefits/training, and capital development).

A number of facilities, such as the "Eye Disease" hospital and the "Emergency" hospital,[21] have aggressively sought private-sector funding and joint ownership. In the former case, 49 percent of the facility is in private hands; a new wing is being built that will be completely owned and operated by private funds. Other hospitals have sought and received selective contracts with employers, tax-deductible corporate donations for new buildings and equipment, and private-pay patients. The level of these revenues relative to existing budgets varies from 2 percent to an estimated 30 percent for some larger hospitals. A few polyclinics have been privatized with corporate monies; a number of pharmacies are either privately owned or joint-stock organizations.

The city of Chimkent has also embarked on an innovative family practice program for physician care. Solo practice and small teams of general practitioners, pediatricians, and obstetricians have moved out of the traditional polyclinic structure and into neighborhood offices. These physicians provide care especially suited for families and primary care generally. Other NIS countries have expressed interest in this Western model of family care (Sheiman, 1992), although this is perhaps the first site to initiate a pilot project. Physicians remain on salary, but design work has started to allow physicians to establish separate private practices. Some dentists have already set up private practices.

Finally, the Chimkent area is notable for its oblast-level "Training Center for Business and New Technology," a joint public-private facility. The center has 30 resident faculty and staff who provide courses in many of the "new" topics including health financing and management, insurance, health economics, claims processing, information systems, and computer skills. Chimkent has been able to progress in a number of areas in part because it has a trained cadre of professionals now in oblast leadership and facility-level management positions.

Nevertheless, a number of obstacles continue to confront oblast leadership, including:

- Only a small percentage of facilities (perhaps 10 percent) have initiated significant organization and management changes.
- Even those that have made changes are constrained by the current regulations and policies of the central government. For example, due to existing trade union agreements, managers have little or no flexibility to dismiss unqualified and unproductive physicians and other staff.
- Many changes initiated under the NEM have been ended or curtailed by conflicting laws and decrees over the last few years. For example, selective contracting activity has been restricted to the VHI companies, and facility budgets for the most part continue to be developed according to production inputs such as bed capacity and numbers of staff.

The eye disease hospital is a 160-bed facility specializing in disorders of the eye and related problems. The Emergency hospital is a 480-bed facility specializing in acute care especially for patients requiring intensive-care therapies or specialized care such as more sophisticated surgical techniques.

In 1992, the new constitution prohibited state-run facilities from treating private-pay patients (Clause 23). This, and subsequent decrees interpreting this clause, created legal ambiguities about the use of voluntary insurance and the use of small, direct, out-of-pocket payments which were being tested by some facilities. Other prohibitions (e.g., decrees) have disallowed majority ownership of any facility by private companies or individuals. At the same time, the oblast Department of Health has been prohibited from participating in joint stock ownership of private companies such as the voluntary health insurance companies. As noted earlier, the Ministry of Finance has now formally cancelled the New Economic Mechanisms for budget development and allocation.

Together, these strictures and changes in policies have created a general context of uncertainty for the oblast in its efforts to make changes and move forward.

3.0 ADEQUACY OF FINANCING

3.1 METHODS

Financing of health care services refers to both the *source* of funds available for care and the *use* of funds for care. Sources of funds for health care in Western nations are typically derived from a mix of government funds, employers, and individuals. In the NIS, until recently, government budgets provided the only source of revenue. The use of funds refers to the level of spending for care (e.g., on a per capita basis or as a percent of GDP) as well as the patterns of spending for services (e.g., the relative proportion spent on salaries, equipment, pharmaceuticals).

The evaluation team examined to what extent the new MHI approach can ensure adequate financing for the health system. It reviewed actual performance in the FEZ demonstration site in Dzheskasgan oblast as well as prospective performance in the South Kazakhstan oblast. The "adequacy of financing" will depend not only on the sources of funds but also on the use of funds in these demonstration areas. Over time, an evaluation of adequacy must include an examination of how stable a financing system will be.

For both demonstration sites, all monetary figures obtained from the government were in the local currency units used at the time. Before 1992, the local currency was Russian roubles. The Kazakhstani rouble was introduced in 1992 and became the tenge in April 1993.[22] Because of the changes in currency and the high inflation in the value of these currencies during 1990-93, the local currency figures were converted to Russian roubles and then adjusted for inflation to allow more useful comparison between years. To obtain constant 1990 Russian roubles, the price index published in the government statistical bulletin was used. There are some limitations to using this method, since the index measured changes in overall consumer prices and not just in the health sector and therefore may not accurately reflect prices for health service inputs.

As an analytical tool, the team developed a computer-based simulation model to analyze hypothetical changes in sources and uses of funds for services.

3.1.1 Sources of Funds

Data were collected on all sources of revenues available for health care from 1990 through 1993. Most of these data were obtained from the records of the territorial medical organization (TMO) and the mandatory health insurance (MHI) organization office in Karajal and the oblast Department of Health in Chimkent City. Additional data for the FEZ demonstration in Dzheskasgan oblast came from the central statistics office of the FEZ administration and the federal tax collector's office in Karajal. Additional data for South Kazakhstan were obtained from the health administration office in a rural health district in one of the three rayons that comprise the planned demonstration area.

The exchange rate for the tenge began at 3.50 per US dollar, dropped to an average of 4.72 per dollar in 1993 and is currently around 30 per dollar.

Particular emphasis was placed on collecting information on the payroll size and number of workers in the demonstration areas in order to estimate the base for revenues to the health insurance fund. These data were not available from any one source nor were they compiled systematically. Therefore they were difficult to obtain. For the FEZ area in Dzheskasgan oblast, detailed data were available for each of the companies participating in the health insurance scheme. In South Kazakhstan, however, only aggregate data were available. For both demonstration sites, an effort was made to collect and use longitudinal data on payroll and employment over several years (e.g., 1990-93). However, data on payroll size and employment were available only for 1993 in both the Dzheskasgan and South Kazakhstan sites. The study also examined the tax burden on companies and individuals in order to better understand the ability to pay and the potential economic impact of the tax.

3.1.2 Uses of Funds

To analyze the impact of various cost-saving and revenue-generating measures in the health sector, detailed information was collected from the two demonstration areas on the volume of services delivered. Analyzing changes in health care spending patterns required that information on the volume and expenditures of services be divided by outpatient, inpatient, and day-care services.[23] It was also necessary to obtain expenditure information according to budgetary items in order to determine the total cost of services. Once these data were obtained, the team was able to estimate costs per unit of service—that is, cost per visit for outpatients and cost per bed-day for inpatients. The team obtained these estimates for a number of diagnostic/disease categories to assist the MHI in making specific decisions concerning changes in health care delivery. However, only the overall average costs of services are reported here.

3.1.2.1 FEZ Demonstration Area (Dzheskasgan Oblast)

In the FEZ demonstration area, polyclinics are freestanding facilities that provide only outpatient care; hospitals offer only inpatient care. Therefore, separate data for inpatient and outpatient services on the volume and costs of services were readily available. The number of services provided by type of diagnosis for each medical speciality and by facility in the FEZ area were available for 1993 only; aggregate statistics (e.g., by in- and outpatient services only) were available for all four years.

The team used the TMO records of expenditures by line item (or "chapters" in Ministry of Health parlance) for each hospital and polyclinic. The line items include salary, social insurance tax, management costs (including utilities, transportation, and other administrative costs), pharmaceuticals, and so on. Since separate cost figures for ancillary services such as laboratory tests and X-rays were not easily available, these costs were lumped together with other costs. To obtain the estimated cost per outpatient visit, the total outpatient costs were divided by the number of visits. Similarly, to obtain the cost per inpatient admission, the total hospital costs were divided by the number of admissions.

Day-care services refer to more palliative care provided to chronic-care patients, terminally ill patients, and other types of patients found more typically in nursing homes or adult-care centers in the United States. Care is provided from 8:00 a.m. to 5:30 p.m., at which point individuals return to their homes and are cared for by other family members who work during the day. This arrangement means, for example, that the hospital can utilize a different mix of staff during evening and night shifts.

To estimate the financial impact of reducing hospital admissions and average lengths of stay for hospital patients, it was necessary to divide inpatient expenditures into those for regular inpatients and those for day-care patients, since costs are believed to be significantly higher for the former. The allocation of total expenditures was based on labor allocations. Nighttime staff were assumed to be dedicated exclusively to regular inpatient care; daytime staff were allocated between regular inpatients and day-care patients on the basis of the number of bed-days in each category. Adding the allocations of nighttime and daytime staff together provided a breakdown of total labor services to the inpatient and day-care patient categories: day-care patients were calculated to cost 75 percent of regular hospital inpatients. The team then used this breakdown to divide total inpatient costs into regular inpatient and day-care patient categories to arrive at separate average bed-day costs for each category.

By disaggregating costs, the spreadsheet program developed for this analysis can be utilized by health care decisionmakers in the Dzheskasgan FEZ and other areas to more closely analyze and monitor costs and efficiency, as well as to establish improved payment/reimbursement methods and levels of payment in the future.

3.1.2.2 South Kazakhstan Oblast

Less detailed cost data were available for the South Kazakhstan oblast than for the FEZ demonstration area. Separate cost data for inpatient and outpatient services and other "cost centers" (e.g., pharmaceuticals) were not available for the oblast as a whole. To obtain cost estimates for each type of service, the team used data from the 1,314-bed oblast hospital in Chimkent, which operates a large polyclinic and for which expenditure information was available by cost center. The proportion of the hospital's costs accounted for by each cost center was applied to the total budget for the demonstration area over four years to obtain an estimate of total costs for inpatient, outpatient, and other cost centers for the entire demonstration area. This method of estimating costs is admittedly crude, and the reader should interpret these findings with caution.

The team also allocated administrative and overhead costs, which were accounted for separately, to inpatient and outpatient care in proportion to the allocation of medical services in order to obtain total and unit costs for each type of care. Efforts were also made to estimate private (outpatient) purchases of pharmaceuticals as well as other costs incurred by patients outside of the hospital. The team used the method of estimating day-care and regular inpatient costs used for the FEZ area.

3.1.3 Simulation Model

A personal computer-based spreadsheet model was developed to analyze simultaneously the impact of hypothetical changes in health care revenues and costs in the FEZ and South Kazakhstan demonstration sites.

On the revenue side, 1993 data were used as the baseline, and several scenarios were analyzed involving revenue changes (e.g., the introduction of user fees, increases in payroll tax contributions, and simultaneous decreases in government contributions). On the cost side, the unit cost estimates for outpatient, inpatient, and day-care services, developed by the team as described above, were used as the basis for analyzing the cost-saving effects of various improvements in the efficiency of health care delivery (e.g., decreases in inpatient admissions and average lengths of hospital stays). The analyses of costs were made under two different set of assumptions concerning inflation.

The monetary figures derived from the analyses of the various revenue and cost scenarios were then converted into the payroll tax compliance rates that would be required to fill the financing gap that would otherwise occur in delivery of health services. Because this model simultaneously analyzes revenues, costs, and the requirements for maintaining a balance between them, it allows health planners to assess the consequences of various financing and health care management options and is the preferred method for analyzing the feasibility of a finance-oriented program such as health insurance.

Additional information on this model is given in Section 3.2.3 and in Appendix A.

3.2 FINDINGS

3.2.1 FEZ Demonstration (Dzheskasgan Oblast)

3.2.1.1 Sources of Funds

Government budget contributions have traditionally provided almost all of the health financing in the FEZ area, as shown in *Exhibit 3-1*. The levels of government funds in real terms, using constant roubles, have fluctuated somewhat in the last several years as shown. In 1992 the health budget rose over the 1990 level in real terms, after falling by almost 25 percent in 1991. Total funds available for health care in 1993 were almost 20 percent higher than in 1990, although the government's contribution remained at about the same level. This increase in funding was a result of the implementation in March 1993 of the payroll contribution. The payroll tax currently contributes about 14 percent of total health care revenues for the FEZ *(Exhibit 3-2*), with the government budget continuing to contribute around 85 percent and with the remaining 1 percent or so come from voluntary contributions from companies (e.g., blood drives and other in-kind contributions.)

Since 1993, 35 companies—mostly large employers—have signed agreements to participate in the insurance scheme through a payroll tax. These 35 firms represent only 10 percent of 327 registered firms in the FEZ; however, they employ 78 percent of the workforce in the area and had a total payroll of 19.6 million tenge in 1993. Two firms alone—the Atasou Mining Company in Karajal (2,427 employees) and the Zhairem Mining Company (2,593 employees)—employ nearly half of the area's workers. The payroll tax approach is appropriate for this area because of the concentration of the workforce in a small number of large firms with substantial market power and the fact that several of the firms export mineral resources to an international market, allowing new taxes to be passed along to consumers in other countries. Most of the nonparticipating firms, on the other hand, are small companies employing less than 100 workers, which presumably would have more difficulty raising the 5 percent payroll contribution.

Actual compliance rates among the 35 firms that have signed agreements are low, however, as shown in *Exhibit 3-2*. If all 35 firms had contributed 5 percent of payroll, the insurance fund would have had 978,612 tenge in 1993. This would have covered 100 percent of health care spending (972,867 tenge in that year *(Exhibit 3-4*). In reality, only 23 of the 35 firms made any contributions, and several of these contributed well under 5 percent. The insurance funds collected totaled 131,644 tenge, which represents only 13.45 percent of the target amount and only 0.67 percent of the total payroll of the 35 firms. This poor compliance rate is due to the financial difficulties that many firms experienced in 1993 as a result of declining economic conditions in the country as a whole. In fact, the state has taken over some of the financial debt of government-owned (public) enterprises, including their health insurance payments. The state now owes the insurance fund more than 725,000 tenge, amounting to approximately 70 percent of the total potential insurance contributions. These funds are currently in escrow and therefore are not yet available to the insurance fund.

Even excluding the new payroll contribution, the total tax burden on both businesses and individuals in the formal economy in Kazakhstan is substantial. Typically, enterprises pay 25 percent in value-added tax (VAT), 30 percent of payroll in the Social Insurance Fund tax, and other taxes such as excise and custom duties *(Exhibit 3-3*). As is apparently the case in the FEZ, other taxes are already so high that businesses are likely to actively resist any attempts to impose additional payroll taxes for health insurance. This calls into question the ability of the health insurance system to reach an adequate level of funding through the payroll tax. (Wages currently make up a very low portion of the total value added in the economy, but this will change as the country moves more toward a market-based system.)

EXHIBIT 3-1
HEALTH CARE REVENUES BY SOURCE, FREE ECONOMIC ZONE (DZHESKASGAN OBLAST)

	1990		1991		1992		1993	
	Amount	% of Total	Amount	% of Total	Amount	% of Total	Amount	% of Total
CONSTANT 1990 ROUBLES:								
Government Health Budget	1,485,000	100	1,148,026	100	1,638,041	100	1,521,002	84.7
Insurance	0	0	0	0	0	0	244,473	13.6
Unutilized from Previous Year	0	0	0	0	0	0	0	0.0
Individual Contribution	0	0	0	0	0	0	0	0.0
Others	0	0	0	0	0	0	30,627	1.7
TOTAL	1,485,000	100	1,148,026	100	1,638,041	100	1,796,102	100.0
TENGE[a]								
Government Health Budget	--	--	--	--	--	--	819,031	84.7
Insurance	--	--	--	--	--	--	131,644	13.6
Unutilized from Previous Year	--	--	--	--	--	--	0	0.0
Individual Contribution	--	--	--	--	--	--	0	0.0
Others	--	--	--	--	--	--	16,492	1.7
TOTAL	--	--	--	--	--	--	967,167	100.0

a. The tenge became the national currency of Kazakhstan in April 1993.

EXHIBIT 3-2
HEALTH INSURANCE PAYROLL TAX CONTRIBUTIONS
FOR FREE ECONOMIC ZONE (FEZ), DZHESKASGAN OBLAST

Total Registered Firms	
Over 500 employees	3
100 to 500 employees	10
Less than 100 employees	314
Total	327
Participating Firms*	
Over 500 employees	3
100 to 500 employees	8
Less than 100 employees	24
Total	35
Number of workers in participating firms	10,540
Average annual wage (tenge)	1,857
Total Payroll (tenge)	19,572,250
Current Revenues for Health Care (1993)	
a) Government contributions for health care (tenge)	819,031
b) Other contributions (voluntary, etc.) (tenge)	16,492
c) Payroll tax collected from firms (tenge)	131,644
d) Total Revenues for health care (tenge)	967,167
e) Total Health care spending (tenge)	972,867
f) Percent of health care spending covered by payroll tax (c ÷ e) (%)	13.5
g) Payroll tax revenues as percent of total payroll (c ÷ 19,572,250) (%)	0.67
Potential Revenues for Health Care (with all 35 participating firms contributing a 5 percent payroll tax)	
h) Payroll tax contribution (payroll x 5%) (tenge)	978,612
i) Percent of current health spending covered by payroll tax (h ÷ e) (%)	101.2

* Firms that signed contracts with the health insurance organizations but did not necessarily contribute funds in 1993.

EXHIBIT 3-3
FEDERAL TAX STRUCTURE, KAZAKHSTAN (1994)

TYPE OF TAX	TAX RATE
CORPORATE TAXES	(%)
Value-added Tax (VAT)	20
Profit Tax	
Applicable to net revenues of enterprises (public and private),	30
banks, insurance companies	45
Economic Transformation Fund*	5
Protection of Mineral Wealth	1
Road Fund*	1
Employment Fund*	2
Support of Entrepreneurship Fund*	1
Social Insurance Fund, comprised of: temporary disability (3%) and social security and permanent disability (27%)	30
Customs Fees	varies by product
State Registration Fees	varies
PERSONAL INCOME TAXES	
Graduated, based on income per year (tenge) of:	
< 100	0%
< 400	12%
400-1,200	48 tenge+ 20%
1,200-1,600	48 tenge + 40%
> 1,600	640 tenge + 60%
State Registration Fees	varies

*. "Fund" refers to a special set-aside portion of resources, separate from general government revenues, dedicated for specific areas or populations.

3.2.1.2 Uses of Funds (Health Expenditures)

As shown in *Exhibit 3-4,* expenditures for health care services have generally paralleled available revenues, which have primarily come from the government budget. Revenues have equalled costs for the most part because of the rigid procedures imposed by the government for paying for inputs such as personnel, pharmaceuticals, and equipment. Annual input levels and costs have been fixed regardless of the level or type of services actually provided. Under this system, increases in services (output) lead to declining marginal costs for health facilities.

Exhibits 3-5 and 3-6 show costs by "cost centers" and by budget items, respectively, for the facilities in the FEZ demonstration area. In 1993 outpatient care (polyclinic) and ambulances accounted for 49 percent of total health expenditures for the FEZ, and inpatient hospital care accounted for another 41 percent *(Exhibit 3-5).*

Despite the rigid way health facilities are paid, there has been some movement of resources among some types of inputs. Between 1990 and 1993, combined salary and social insurance costs for hospitals and polyclinics varied in real terms between 57 percent and 60 percent of total expenditures, except for 1991 when they increased to 69 percent. There was a gradual increase in the relative cost of food items and utilities, whereas the proportion of total spending on pharmaceuticals and small equipment decreased steadily.

Exhibit 3-7 shows the evaluation team's estimated unit costs for hospital and outpatient services for both the FEZ and South Kazakhstan sites. The average length of stay (ALOS) for regular hospital inpatients in the FEZ area was more than 13 days, and the average cost per hospital stay was 58.81 tenge. Day-care patients spent about the same amount of time in hospital as regular inpatients, but the average cost per day-care admission was 25 percent less (44.10 tenge).

EXHIBIT 3-4
TOTAL REVENUES AND SPENDING:
HOSPITALS AND POLYCLINICS IN THE FREE ECONOMIC ZONE, DZHESKASGAN OBLAST

	1990	1991	1992	1993
CONSTANT 1990 ROUBLES:				
Total Revenues for Health	1,485,000	1,148,026	1,638,041	1,796,102
Total Spending	1,485,000	1,161,184	1,168,869	1,806.748
Revenue Minus Spending	0	(13,158)	469,172	(10,647)
Percent of 1990 Total Spending	100%	78.2%	78.7%	121.7%
TENGE:				
Total Revenues for Health	--	--	--	967,167
Total Spending	--	--	--	962,900
Revenue Minus Spending	--	--	--	(5,733)

EXHIBIT 3-5
SPENDING BY COST CENTERS:
HOSPITALS AND POLYCLINICS IN THE FREE ECONOMIC ZONE, DZHESKASGAN OBLAST

	1990		1991		1992		1993	
	Amount	% of Total	Amount	% of Total	Amount	% of Total	Amount	% of Total
CONSTANT 1990 ROUBLES:								
Polyclinics and Ambulance	720,348	48.5	656,044	56.5	800,913	68.5	883,611	48.9
Hospital	554,652	37.4	393,627	33.9	225,184	19.3	737,890	40.8
Pharmaceuticals*	160,000	10.8	85,271	7.3	64,305	5.5	69,765	3.9
Capital/Construction	25,000	1.7	13,121	1.1	54,091	4.6	80,718	4.5
Others	25,000	1.7	13,121	1.1	24,376	2.1	34,763	1.9
TOTAL	1,485,000	100.0	1,161,184	100.0	1,168,869	100.0	1,806,748	100.0
TENGE:								
Polyclinics and Ambulance	--	--	--	--	--	--	475,808	48.9
Hospital	--	--	--	--	--	--	397,340	40.8
Pharmaceuticals*	--	--	--	--	--	--	37,567	3.9
Capital/Construction	--	--	--	--	--	--	43,465	4.5
Others	--	--	--	--	--	--	18,719	1.9
TOTAL	--	--	--	--	--	--	972,900	100.0

* Does not include pharmaceuticals that are sold on an outpatient basis (worth 47,655 tenge in 1993).

EXHIBIT 3-6
SPENDING BY BUDGET CHAPTERS:
HOSPITALS AND POLYCLINICS IN THE FREE ECONOMIC ZONE, DZHESKASGAN OBLAST

	1990		1991		1992		1993	
	Amount	% of Total	Amount	% of Total	Amount	% of Total	Amount	% of Total
CONSTANT 1990 ROUBLES								
Salary	800,000	53.9	641,447	55.2	507,741	43.4	779,043	43.1
State Insurance	50,000	3.4	167,763	14.5	187,534	16.0	291,004	16.1
Management Cost	150,000	10.1	82,237	7.1	123,157	10.5	348,944	19.3
Business Trips	10,000	0.7	6,579	0.6	8,397	0.7	4,643	0.3
Food	150,000	10.1	115,132	9.9	134,353	11.5	249,777	13.8
Pharmaceuticals	150,000	10.1	65,789	5.7	55,141	4.7	54,412	3.0
Equipment	50,000	3.4	16,447	1.4	36,387	3.1	6,685	0.4
Sheets & Linen	50,000	3.4	32,895	2.8	30,789	2.6	2,971	0.2
Maintenance & Construction	50,000	3.4	16,447	1.4	64,377	5.5	42,156	2.3
Other	25,000	1.7	16,447	1.4	20,993	1.8	27,113	1.5
TOTAL	1,485,000	100.0	1,161,184	100.0	1,168,869	100.0	1,806,748	100.0
TENGE:								
Salary	--	--	--	--	--	--	419,500	43.1
State Insurance	--	--	--	--	--	--	156,700	16.1
Management Cost	--	--	--	--	--	--	187,900	19.3
Business Trips	--	--	--	--	--	--	2,500	0.3
Food	--	--	--	--	--	--	134,500	13.8
Pharmaceuticals	--	--	--	--	--	--	29,300	3.0
Equipment	--	--	--	--	--	--	3,600	0.4
Sheets & Linen	--	--	--	--	--	--	1,600	0.2
Maintenance & Construction	--	--	--	--	--	--	22,700	2.3
Other	--	--	--	--	--	--	14,600	1.5
TOTAL	--	--	--	--	--	--	972,900	100.0

EXHIBIT 3-7
ESTIMATED AVERAGE UNIT COSTS OF HEALTH CARE SERVICES:
FEZ (DZHESKASGAN) AND SOUTH KAZAKHSTAN DEMONSTRATION SITES (1993)

	FEZ (DZHESKASGAN)	SOUTH KAZAKHSTAN
AVERAGE LENGTHS OF STAY (days):		
Hospital Inpatient	13.24	14.86
Day-Care	13.51	N/A
AVERAGE COSTS (tenge):		
Cost per Inpatient Admission	58.81	119.24
Cost per day-care Admission	44.10	N/A
Cost per Outpatient Visit	2.80	3.39

3.2.2 South Kazakhstan Oblast

3.2.2.1 Revenues

Because the MHI demonstration has not yet been implemented, nearly all revenues for health care come from the government *(Exhibit 3-8).* In real terms (constant roubles), revenues for health care decreased significantly between 1990 and 1991 and rose gradually thereafter. However, funds available for 1993 are more than 10 percent lower than the 1990 level.

The employment situation in this area is extremely different than that in the FEZ (Dzheskasgan), where a small number of firms employ the majority of workers. In Chimkent and the three rayons participating in the MHI demonstration there are an estimated 43,000 companies. These firms employ a total of 246,575 workers and generate a total payroll of 778 million tenge. *Exhibit 3-9* describes the demographic and economic statistics for Chimkent and the three rayons in the oblast. The average yearly wage at these companies was 3,155 tenge in 1993. The MHI demonstration is expected to impose a 4 percent payroll tax to finance a portion of health care. This 4 percent insurance tax has the potential to raise more than 30 million tenge, or more than that required to pay for *all* health care in the region under current spending levels. However, as in the FEZ area, participation and compliance could be quite low, particularly in the early years of the experiment. One difference in South Kazakhstan is that contributions will be collected automatically through the tax system, as opposed to the contractual arrangements established in the FEZ area.

3.2.2.2 Health Expenditures

As in the Dzheskasgan oblast, expenditures in South Kazakhstan facilities have fluctuated considerably from year to year.[24] Expenditures for salaries and social insurance (*Exhibit 3-10*) are lower in South Kazakhstan oblast than in the FEZ in Dzheskasgan, totaling around 41 percent of total expenditures, except for 1991. In contrast to spending patterns in the FEZ area, hospitals consumed nearly 90 percent of the total health care budget, mainly for inpatient care. Spending by cost centers are described in *Exhibit 3-11*.

As shown in *Exhibit 3-7*, the average cost per inpatient hospital admission in this demonstration site was estimated at 119 tenge, more than double that of the FEZ in Dzheskasgan oblast. The average cost per outpatient visit was estimated to be approximately 3.4 tenge (versus 2.8 in the FEZ). Given the high costs and heavy utilization of inpatient care in this oblast, it is clear that considerable health care savings can be achieved by shifting inpatient care to outpatient care, where appropriate, and by decreasing the average length of hospital stays.

As noted, government budget and other contributions to the health sector was used as a proxy for spending.

EXHIBIT 3-8
REVENUES BY SOURCE:
HOSPITALS AND POLYCLINICS IN CHIMKENT AND THREE RAYONS, SOUTH KAZAKHSTAN OBLAST

	1990		1991		1992		1993	
	Amount	% of Total	Amount	% of Total	Amount	% of Total	Amount	% of Total
CONSTANT 1990 ROUBLES:								
Government Health Budget	39,439,600	100.0	27,572,039	98.6	31,768,848	98.7	32,041,229	98.7
Insurance	0	0.0	0	0.0	0	0.0	2	0.0
Unutilized from Previous Year	0	0.0	0	0.0	0	0.0	0	0.0
Individual Contribution	0	0.0	0	0.0	0	0.0	0	0.0
Others	0	0.0	386,842	1.4	423,903	1.3	421,283	1.3
TOTAL	39,439,600	100.0	27,958,882	100.0	32,192,751	100.0	32,462,514	100
TENGE:								
Government Health Budget	--	--	--	--	--	--	17,253,600	98.7
Insurance	--	--	--	--	--	--	1	0.0
Unutilized from Previous Year	--	--	--	--	--	--	0	0.0
Individual Contribution	--	--	--	--	--	--	0	0.0
Others	--	--	--	--	--	--	226,853	1.3
TOTAL	--	--	--	--	--	--	17,480,454	100.0

EXHIBIT 3-9
DEMOGRAPHIC AND EMPLOYMENT DATA
FOR CHIMKENT AND THREE RAYONS, SOUTH KAZAKHSTAN OBLAST (1993)

Population	
Chimkent City	446,500
Pakto-Araiski	73,500
Sairamski	196,800
Zhetysatski	79,700
Total	716,800
Employment	
Employed	246,575
Unemployed	N/A
Unemployment rate	N/A

Number of Enterprises and Workers

	Number of Enterprises	Payroll (Tenge)	Number of Workers	Average Wage
Chimkent City	41,886	659,294,558	186,920	3,527
Pakto-Araiski	97	16,833,100	21,758	774
Sairamski	40	44,735,417	18,663	2,397
Zhetysatski	1,006	57,033,617	19,234	2,965
Total	43,029	777,896,692	246,575	3,155

Spending on Health Care

Health care spending as percent of total payroll (%)	2.2
Per capita spending on health care (tenge)	24

EXHIBIT 3-10
SPENDING BY BUDGET CHAPTERS:
HOSPITALS AND POLYCLINICS IN CHIMKENT AND THREE RAYONS, SOUTH KAZAKHSTAN OBLAST

	1990		1991		1992		1993	
	Amount	% of Total	Amount	% of Total	Amount	% of Total	Amount	% of Total
CONSTANT 1990 ROUBLES:								
Salary	1,696,203	43.0	1,294,747	46.3	9,649,985	30.0	1,002,880	30.9
State Insurance	1,187,058	3.0	3,367,581	12.0	3,570,506	11.1	3,711,091	11.4
Management Cost	3,620,806	9.2	2,573,428	9.2	8,038,200	25.0	7,596,469	23.4
Business Trips	99,846	0.3	115,131	0.4	71,908	0.2	38,863	0.1
Food	3,630,513	9.2	2,502,847	9.0	3,830,320	11.9	2,664,397	8.2
Pharmaceuticals	6,625,200	16.8	2,933,337	10.5	2,309,485	7.2	2,831,945	8.7
Equipment	2,672,268	6.8	632,219	2.3	420,461	1.3	3,969,153	12.2
Sheets & Linen	959,631	2.4	918,795	3.3	1,947,203	6.1	686,561	2.1
Maintenance & Construction	1,867,953	4.7	697,544	2.5	647,275	2.0	299,112	0.9
Other	1,814,286	4.6	1,270,520	4.5	1,707,409	5.3	636,119	1.1
TOTAL	3,943,960	100.0	2,795,888	100.0	3,219,275	100.0	3,246,251	100.0
TENGE:								
Salary	--	--	--	--	--	--	5,400,322	30.9
State Insurance	--	--	--	--	--	--	1,998,353	11.4
Management Cost	--	--	--	--	--	--	4,090,556	23.4
Business Trips	--	--	--	--	--	--	20,927	0.1
Food	--	--	--	--	--	--	1,434,728	8.2
Pharmaceuticals	--	--	--	--	--	--	1,524,949	8.7
Equipment	--	--	--	--	--	--	2,137,314	12.2
Sheets & Linen	--	--	--	--	--	--	369,700	2.1
Maintenance & Construction	--	--	--	--	--	--	161,066	0.9
Other	--	--	--	--	--	--	342,538	2.0
TOTAL	--	--	--	--	--	--	1,748,045	100.0

EXHIBIT 3-11
ESTIMATED BREAKDOWN OF SPENDING BY COST CENTER:
HOSPITALS AND POLYCLINICS IN CHIMKENT AND THREE RAYONS, SOUTH KAZAKHSTAN OBLAST

	1990		1991		1992		1993	
	Amount	% of Total	Amount	% of Total	Amount	% of Total	Amount	% of Total
CONSTANT 1990 ROUBLES:								
Polyclinics and Ambulance	5,523,111	14.0	3,901,709	14.0	4,149,646	12.9	3,276,352	10.1
Hospital	33,916,489	86.0	24,057,173	86.0	28,043,106	87.1	29,186,162	89.9
Pharmaceuticals	0	0.0	0	0.0	0	0.0	0	0.0
Capital/Construction	0	0.0	0	0.0	0	0.0	0	0.0
Others	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL	39,439,600	100.0	27,958,882	100.0	32,192,751	100.0	32,462,514	100.0
TENGE:								
Polyclinics and Ambulance	--	--	--	--	--	--	1,764,254	10.1
Hospital	--	--	--	--	--	--	15,716,200	89.9
Pharmaceuticals	--	--	--	--	--	--	0	0.0
Capital/Construction	--	--	--	--	--	--	0	0.0
Others	--	--	--	--	--	--	0	0.0
TOTAL	--	--	--	--	--	--	17,480,454	100.0

3.2.3 Results of the Simulations

The objective of the simulation tests was to determine what level of compliance would be required among employers paying payroll taxes into the health insurance fund to finance health care. The simulations involved alternative scenarios for costs, revenues, and inflation.

The compliance rate is defined as the ratio of the payroll tax contribution collected to the contribution expected. For the FEZ area, the expected payroll contribution is 5 percent of the payroll of the 35 firms that signed contracts with the MHI, or 978,612 tenge in 1993. Therefore, 100 percent compliance would have generated 978,612 tenge. In reality, as explained in *Section 3.2.1*, the compliance rate for the payroll tax was only 13.45 percent, which generated 131,644 tenge. The expected payroll contribution for the South Kazakhstan demonstration site used in the analyses was 4 percent of the payroll of all the firms in the area.

3.2.3.1 Cost Scenarios

Three hypothetical scenarios involving cost-savings through improved efficiency in health care delivery were analyzed using 1993 data from the FEZ area and South Kazakhstan:

- Scenario 1 assumes a 10 percent reduction in the number of inpatient admissions and a corresponding increase in the number of outpatient cases. The total number of patients seeking care is kept at the 1993 level.
- Scenario 2 assumes a 10 percent reduction in the average length of stay (ALOS) for both regular inpatient and day-care admissions. The combined number of patients receiving inpatient, day-care, and outpatient services is kept at the 1993 level.
- Scenario 3 combines Scenarios 1 and 2 by assuming a 10 percent reduction in the number of inpatient admissions and a corresponding increase in outpatient cases, as well as a 10 percent drop in ALOS for both inpatient and day-care services.

Under each scenario, total expenditures and savings realized from the efficiency improvements were estimated using two different assumptions concerning inflation. The "no inflation" case assumes that any inflation that occurs will have an equal effect on health care costs and revenues (based on the government's allocation and the size of the payroll of firms paying the payroll tax). The second inflation case assumes that the cost of health care increases by 50 percent more than government allocations and the payroll of firms paying the payroll tax; in this case, the financing gap to be filled through the payroll tax becomes much larger, requiring much higher compliance rates.

3.2.3.2 Revenue Assumptions (Cases)

The model evaluates each of the three cost scenarios (and the two inflation cases for each scenario) against four sets of assumptions (cases) concerning revenues:

- Case 1 assumes no change in the amounts or sources of revenue from 1993, including payroll tax contributions, and thus represents the current situation.

- Case 2 assumes that the contributions from the government, payroll tax, and other sources remain at 1993 levels and that a copayment of one tenge is charged for all outpatient visits as an additional source of revenue.
- Case 3 assumes that the size of the aggregate payroll increases by 25 percent and that revenues from governmental and other sources remain at 1993 levels.[25]
- Case 4 assumes that the government's contribution decreases to 60 percent of total expenditures and that the payroll tax and other (voluntary) contributions make up the remaining 40 percent. The 60 percent figure is an estimate of the proportion of health care costs that would be incurred by the non-working population (e.g., students, pensioners, veterans, disabled, etc.), which the government will continue to cover under these health insurance schemes. (Although this group represents a little more than half of the population, it generally consumes a disproportionately higher level of health care services than the working population.)

3.2.3.3 Results

There were a total of 24 simulations for each demonstration site (3 cost scenarios × 2 inflation cases × 4 revenue cases). *Exhibit 3-12* shows the payroll tax compliance rates among employers required to fill the financing gap for health care delivery that would otherwise occur under the simulations.

The first column of data in *Exhibit 3-12* outlines the various revenue scenarios with no change in the costs of health care through efficiency improvements—the present situation. As shown, for the FEZ area the current 13 percent payroll tax compliance rate could be reduced to 11 percent if the size of the payroll increased by 25 percent (case 3). Furthermore, the compliance rate could be reduced to zero if a copayment of one tenge were charged for all outpatient cases (case 2). This assumes, of course, that the introduction of user fees would not decrease the demand for health services. On the other hand, if the government provided only 60 percent of the required health care funding, a 38 percent compliance rate would be is necessary to provide the remaining funding at the current level of efficiency. (Although efficiency savings could reduce the compliance rate slightly to 34-36 percent, it is unlikely that these compliances rates could be achieved in the short run.) In the absence of efficiency improvements, in order to fund the current level of services it is therefore essential either that the government continue to fund health care at current levels or that other funding sources are seriously considered.

This can occur as a result of an increase in the number of employees at participating firms, an increase in wages, an increase in the number of firms contributing to the MHI, or a combination of these factors.

EXHIBIT 3-12 RESULTS OF THE SIMULATIONS: EXPENDITURE LEVELS AND REQUIRED

EXHIBIT 3-12
RESULTS OF THE SIMULATIONS: EXPENDITURE LEVELS AND REQUIRED PAYROLL TAX COMPLIANCE RATES UNDER ALTERATE REVENUE AND EXPENDITURE SCENARIOS

	Current Situation (Current Levels of Efficiency)	SCENARIO 1		SCENARIO 2		SCENARIO 3	
		10% Reduction in Inpatient Admissions		10% Reduction in Inpatient and Day-care ALOS		10% Reduction in Admissions and ALOS	
		With No Inflation	With 50% Inflation	With No Inflation	With 50% Inflution	With No Inflation	With 50% Inflation
FEZ (DZHESKASGAN OBLAST)							
HEALTH CARE SPENDING							
Total Spending after Efficiency Gains (tenge)	972,867	930,834	1,396,252	928,627	1,392,940	890,988	1,336,483
Spending Reduction Due to Efficiency Gains (tenge)	N/A	42,033	63,049	44,240	66,361	81,879	122,818
Spending Reduction Due to Efficiency Gains (percent)	N/A	4	4	5	5	8	8
HEALTH CARE REVENUE: Insurance Compliance Rate Needed to Meet Estimated Spending after Efficiency Gains (percent)							
Case 1[a]	13.45	10	57	10	57	5	51
Case 2[b]	N/A	0	38	0	38	0	32
Case 3[c]	11.00[d]	8	46	8	46	4	41
Case 4[e]	38.00	36	55	36	55	34	52
CHIMKENT AND THREE RURAL RAYONS							
HEALTH CARE SPENDING							
Total Spending after Efficiency Gains (tenge)	17,480,454	15,953,538	23,930,307	15,908,834	23,863,251	14,539,080	21,808,620
Spending Reduction Due to Efficiency Gains (tenge)	N/A	1,526,916	2,290,374	1,571,620	2,357,430	2,941,374	4,412,061
Spending Reduction Due to Efficiency Gains (percent)	N/A	9	9	9	9	17	17
HEALTH CARE REVENUE: Insurance Compliance Rate Needed to Meet Estimated Spending after Efficiency Gains (percent)							
Case 1[a]	N/A	0	49	0	48	0	32
Case 2[b]	N/A	0	45	0	45	0	29
Case 3[c]	N/A	0	39	0	39	0	28
Case 4[e]	49.00	47	71	47	71	43	64

a. Case 1: Government contribution at 1993 level (assumes the amount of revenue coming from all sources other than insurance remains the same).
b. Case 2: Government contribution at 1993 level plus 1 tenge copayment per outpatient visit.
c. Case 3: Government contribution at 1993 level and size of payroll increases by 25 percent.
d. Estimated.
e. Case 4: Government contribution equals 60 percent of total spending.

PAYROLL TAX COMPLIANCE RATES UNDER ALTERNATE REVENUE AND EXPENDITURE SCENARIOS

Relatively modest increases in the efficiency of health care delivery can produce significant savings, requiring lower payroll tax compliance rates. In the FEZ, assuming no changes in revenues (case 1) and no inflation, a 10 percent reduction in the number of inpatient admissions in favor of outpatient care (scenario 1) could reduce expenditures by 4.3 percent from the current level, thereby lowering the required tax compliance rate to 10 percent. A similar rate of savings (4.6 percent) can be realized from a modest reduction in average length of hospital stays (ALOS) (scenario 2). With reductions in both inpatient admissions and ALOS (scenario 3), internal savings of more than 8 percent can be achieved, resulting in a compliance rate in FEZ of as low as 5 percent, even in the absence of increases in current revenue levels (case 1), as long as inflation is not a factor.

The most significant effect of inflation appears to be on the ability of the payroll tax to finance health care. For example, a 50 percent rate of inflation in health care costs would result in cost increases of between 19 and 47 percent under the four revenue cases in scenario 1, requiring estimated compliance rates of between 38 and 57 percent. A high general level of inflation is likely to increase wages and consequently the size of the payroll from which taxes are drawn, although wages are unlikely to keep pace with inflation. Inflation has been several hundred percent over the last two years, and wages have been increasing at less than half that (the assumption in our analysis). The scenarios analyzed here therefore likely underestimate the compliance rates required. Consequently, under conditions of high general inflation and lagging wage increases, the economy would have to grow at a considerable rate to keep the compliance rate at the levels indicated for conditions of no inflation in *Exhibit 3-12.* Alternatively, in order to keep up with the rising cost of health care, revenues from the government and from other sources would have to increase even if efficiency improvements were made.

The relative savings in health care costs are considerably higher in the South Kazakhstan region than in the FEZ demonstration area. This is primarily due to the fact that a much greater proportion of patients in South Kazakhstan are treated as inpatients than in the FEZ (90 percent versus 41 percent). The possible reductions in health care spending in Chimkent and the three rural rayons due to efficiency gains are estimated to be from 9 to 17 percent, as shown in *Exhibit 3-12*.

The economic base in South Kazakhstan also is relatively more prosperous, and so health care costs represent less than 3 percent of the total payroll in the demonstration area of Chimkent and the three rural rayons, compared with about 5 percent in FEZ. South Kazakhstan also has a lower health insurance payroll tax rate than FEZ (4 percent versus 5 percent). Since the government currently finances most health care spending, no payroll tax is required when inflation is not a factor as long as the government contributions remain at current levels (cases 1-3). With 50 percent inflation, the lower payroll tax in South Kazakhstan means that lower compliance rates are necessary than in FEZ to raise sufficient funds when government funding remains at 1993 levels without the introduction of a copayment (cases 1 and 3). For example, under scenario 3 (a 10 percent drop in both inpatient admissions and ALOS) and with an increase in the payroll of 25 percent (case 3) and inflation of 50 percent, the estimated compliance rate for South Kazakhstan is 28 percent versus 41 percent for FEZ. However, if the government's contribution is decreased to 60 percent of health care expenditures (case 4), compliance rates of between 43 and 71 percent would be required in South Kazakhstan, which would be much more difficult to achieve.

The results of these simulations involving cost savings through more efficient health care delivery should be interpreted with caution. The reductions in ALOS or inpatient cases included here should be considered the "upper limits" of potential savings because the model assumes that all costs are variable, which may not always be the case. For example, if trade unions make it difficult for health care facilities to make staffing changes, staff reductions at health care facilities may be less than 10 percent and the actual cost reductions therefore would be less than those assumed in the analyses *(see Section 4.0).* In addition, many of the administrative and overhead costs included in the estimates of average spending are fixed costs and probably can not be reduced—at least not with a relatively small reduction in ALOS. It is also true that savings in one category could be "diverted" to cover increased spending in other categories such as equipment, supplies, and pharmaceuticals, which are desperately needed.

3.2.4 Conclusions

The analyses demonstrate that no "correct" payroll contribution level can be determined in isolation of other factors. Revenue levels must be calculated in conjunction with several variables, including: a) realistic levels of government contributions, b) realistic levels of payroll tax compliance among employers, and c) measures to increase the efficiency of health care service delivery. Other variables (discussed below) include other public and private sources of revenue, an agreed health insurance benefits package, and the actuarial (cost) estimates of care to be delivered under that benefits package.

The evaluation team concluded that the MHI should not depend solely on a payroll tax to finance health insurance for a number of reasons. First, given the already heavy tax burden on companies in Kazakhstan, an additional tax could negatively affect capital formation and could especially hurt small firms in terms of decreasing payrolls, lowering wages, or decreasing their competitive position. Even if the proposed payroll tax were collected through the existing system, as proposed for South Kazakhstan, it could lead to an expansion of the informal or "underground" economy where taxes are evaded. Kazakhstan will have greater difficulty in moving to a market-based economy or in easily recovering from economic depression with such a disincentive to bringing businesses into the formal economy.

Second, the experience in the FEZ area has been that compliance with the tax among employers is quite low (13 percent), even though the FEZ is an area where such a payroll tax should be most effective because most workers are employed by a small number of large firms that can easily be identified and monitored. In areas where there are a large number of small companies, such as South Kazakhstan *(Exhibit 3-9),* payroll tax compliance rates can be expected to be lower.

Third, if inflation has a significantly greater effect on health care costs than on health revenues, the compliance rates among employers would need to be unrealistically high (50 percent or higher) in order to finance the gap between revenues and costs. For these reasons, the government should consider alternative means of financing the health insurance scheme.

One important alternative suggested by the analyses is to generate funds through cost savings. Improvements in the efficiency of health care delivery could lead to significant savings, which would substantially reduce dependence on the payroll tax for financing of the system. Efficiency improvements in health care delivery are discussed in detail in *Section 4.0.* Again, however, the positive effects of such cost-saving measures could be offset by high inflation of health care costs relative to revenues.

Finally, the analyses highlight the importance of predictable and stable funding from the government. The central, oblast, and local governments are moving in the right direction by using capitated payments to the MHI fund to pay for the non-working population, rather than allocating funds according to the 18 categories used in the past. However, the unpredictability of the capitated rates—which are based on legislated appropriations—creates erratic funding levels. If this continues, it could wreak havoc on the MHI organization's ability to manage its funds prudently and to remain solvent.

4.0 CHANGES IN EFFICIENCY

4.1 METHODS

The evaluation team examined the results of the FEZ demonstration for any measurable effects on the efficiency of health care delivery. It also reviewed the planned health insurance program for the South Kazakhstan oblast to identify elements that could promote or hinder the achievement of greater efficiency.

Efficiency can be defined as the minimal mix of inputs, such as labor and capital, needed to produce a defined output or product. Measuring efficiency in health care is constrained by limitations in several areas:

- Understanding the best mix of inputs. Delivering health care services involves a mix of science and technology, but it also requires less definable cognitive and interpersonal factors. The mix of these elements is not always well-defined and may change over time as new medicines and procedures are introduced. Often, an illness or episode of care requires multiple sets of separate inputs such as physician visits, hospital care, and home care following discharge.
- Clearly defining the product or output. For hospitals, the product can be defined as discharges; for polyclinics, as outpatient visits or number of tests. But hospitals and clinics may have other functions or objectives such as serving the psycho-social needs of individuals or community support and outreach.
- Factoring into outputs any attributable changes in health outcomes such as morbidity and mortality. Even when functions and objectives are well-defined, adjusting for the relative severity of cases when making comparisons and then correlating some mix of inputs to the attributable changes in health status remains an inexact science.

Because of these limitations, a "second best" solution is to examine multiple measurements that may be indicative of relative efficiency. Patterns that appear across multiple measures and over time can help analysts to infer attributable changes in efficiency.

For this evaluation, changes in efficiency were gauged by focusing on multiple measures for two levels or types of efficiency commonly used for health sector analysis: first, the "production" of care at the facility level, also called the "technical efficiency" of care; and second, the "allocative efficiency" of care, which broadly measures how resources are used—or allocated—across settings of care to achieve the best possible outcomes for the entire health sector.

Data for multiple measurements of each type of efficiency were gathered across facilities and over several years (1990-93), wherever possible. These years were chosen to allow a "baseline" or pre-intervention comparison with subsequent changes under both the New Economic Mechanisms (in both oblasts) and the MHI demonstration (in the FEZ area). Data were drawn from available aggregate statistics, some of which were available in computerized form. Samples of patient records also were reviewed to allow for more focused analysis.

4.1.1 Technical Efficiency

One procedure is considered more technically efficient than an alternative if its gives improved results with fewer inputs, or if it produces a greater quantity of output using the same inputs. Possible output measures are hospital admissions/discharges, outpatient visits, and classes of procedures (lab tests, deliveries, etc.). To assess technical efficiency, output is related to inputs—for example, the number of deliveries (new births) per staff member.

Measuring output is complicated by the need to adjust for the relative severity of patients' conditions or the mix of cases ("case mix"), which allows for more meaningful comparison. Commonly used variables to adjust case mix include diagnoses and procedures as well as demographic variables such as age and gender. The data available to the evaluation team were often aggregated and the case-mix adjustment was limited to one general diagnostic category (e.g., pneumonia or stroke). However, a simple case of pneumonia is different from one of severe pneumonia that is associated with diabetes and heart problems. Similarly, a stroke patient with mild transient ischemic episodes is not comparable clinically to another stroke patient with associated heart complications such as myocardial infarctions or worse. Each requires a different course of treatment.

To adjust for case mix beyond the level of a single diagnostic category, two alternative approaches were utilized. One approach grouped a 100 percent sample of admissions into three categories according to average lengths of stay (ALOS). The ALOS measure can serve as a relatively valid proxy for resource use (see, e.g., Pettingill and Vertrees, 1982). Then, the number of admissions can be weighted by the relative share of each of three groups. A paper by Sergi Kim, M.D. (reproduced in *Appendix B)* describes in greater detail the procedure used for adjusting for case mix.

The second approach was to weight individual unit costs for each diagnostic group. This is a more refined approach but is one that requires more extensive cost data. Cost data in the FEZ demonstration area was available for only two years (1991 and 1992) and for only two departments (surgical and internist) of a single hospital (Karajal). As a result, the analysis can be considered to be only illustrative.

4.1.2 Allocative Efficiency

Measuring allocative efficiency involves looking primarily at the structural dimensions of the system—relative cost-effectiveness across settings for a comparable case, as well as the interaction between medical facilities and alternative settings of care with varying levels of cost-effectiveness. For example, the use of day-care centers for palliative care may provide comparable outcomes with fewer resource inputs than a hospital admission. Also, simple surgeries may be less resource-intensive if performed in same-day outpatient surgical centers rather than on an inpatient basis. At the same time, the number of hospital admissions may increase if the performance of polyclinics is poor, and delayed preventive and primary care services may increase the demand for more expensive acute care services, both of which imply an increase in costs.

Common measures of allocative efficiency include the ratio of inpatient to outpatient cases, referral rates of patients from general practitioners to specialists and/or for inpatient care, the ratio of general practitioners to specialists, admission rates per 1,000 population, and the number and occupancy rates of hospital beds. An examination of allocative efficiency also can involve comparison of unit costs across similar facilities (e.g., general hospitals in a region), as well as across different types of facilities (e.g., polyclinics and freestanding general practitioners). These measures and approaches can allow inferences to be made about the relative cost-effectiveness of various types of services (e.g., preventive care) as well as types of settings (e.g., home care).

The evaluation team initially developed several general hypotheses about the changes in allocative efficiency resulting from the NEM and the MHI demonstration, including that:

- Primary care physicians were assuming a greater share of patient-care services.
- The ratio between general practitioners and specialists was changing to reflect an increase in primary care.
- The relative share of inpatient care was diminishing in parallel.
- Case mix and, correspondingly, the work structure in hospitals were becoming more complex.

These changes were expected because of the change in incentives from a) the transition to per capita financing and (later) the new revenue sources from employer contributions; b) the formation of groups of primary care providers (APTKs) and their role as fundholders; c) general increases in salaries and the system of bonuses and penalties; d) the formation of medical staff teams in the hospitals and polyclinics; and e) the introduction of the quality assurance system.

4.2 FINDINGS

4.2.1 FEZ Demonstration

4.2.1.1 Allocative Efficiency

The analyses indicate a positive change toward greater allocative efficiency from 1990 through 1993, using data on several measures:

- The share of visits to primary care physicians (general practitioners, obstetricians, and pediatricians) increased from 37.2 percent in 1990 to 51.7 percent in 1993 *(Exhibit 4-1)*. For pediatricians alone, the share of visits rose from 12.4 percent to 23.0 percent.
- The ratio of primary care physicians (general practitioners, obstetricians, and pediatricians) to specialists in polyclinics increased from 1:5.2 to 1:2.6 (*Exhibit 4-2*).
- The number of hospital admissions in Karajal decreased by 26 percent, from 6,215 to 4,561, between 1990 and 1993 *(Exhibit 4-3)*, with a corresponding increase in outpatient (polyclinic) visits of 14 percent, from 165,128 to 189,177 *(Exhibit 4-1)*.

- The ratio of outpatient visits to hospital admissions increased from 26:1 in 1990 to 41:1 in 1993. (In comparison, this ratio remained at about 33:1 throughout this period for Kazakhstan as a whole.)

These data tend to confirm the hypothesis that APTK physicians are responsible for an increased share of care, but they also confirm that polyclinics are providing more primary health care. Additional data on hospitals show that:

- Between 1990 and 1993, the total number of the hospital beds in Karajal for regular cases decreased by 32 percent, from 200 to 135 *(Exhibit 4-4),* a reduction caused by a shift in beds from inpatient care to a new day-care center for palliative care shortly after the initiation of the NEM. The ratio of beds per 1,000 population dropped from 14.7 to 10.2—about 30 percent.
- Hospital admission rates as a whole in Karajal decreased from 31.5 to 23.9 per 1,000 population, a decrease of 24 percent *(Exhibit 4-5).* Prior to the introduction of the NEM, this ratio was higher than the average for all of Kazakhstan at 23.6 per 1,000. This decrease may be due in part to factors other than those mentioned, including less demand for hospital care due to a deterioration of conditions (bad food, insufficient medicines) and a greater fear of losing one's job as a result of illness or hospital admission. Nevertheless, it represents a sizable change over the last few years.

Interviews with managers and physicians at the "territorial" medical organization (TMO) revealed that duplication of physician functions in polyclinics and hospitals decreased noticeably and that rotation of specialists increased, allowing physicians in polyclinics to upgrade their skills through work in hospitals. There also is a perception that continuity of care increased across settings and that duplicate lab tests were reduced. These changes may be attributable to new quality assurance-related sanctions and penalties.

These positive patterns in overall resource allocation have not completely addressed historical structural distortions. Bed capacity is still higher than in Western countries which can lead to inefficiency, because hospital beds tend to be occupied and because larger bed capacity has been empirically linked to longer average lengths of stay (OECD, 1993). In fact, FEZ hospitals continue to admit simple cases that could be treated on an outpatient basis. Record reviews and analysis by team member Sergi Kim, M.D. found that a significant number (35 percent) of inpatient cases with diagnoses of respiratory diseases, viral infections, and mental disorders could have been treated on an outpatient basis *(Appendix B).* In addition, more serious cases of mental disorder could be better placed in regional, specialized institutions.

The percentage of patients referred to hospitals for inpatient care on their first visit to a polyclinic is still far too high at about 30 percent. In addition, the number of referrals from the local FEZ area hospitals to the regional hospitals grew from 132 to 212 per year, an increase that may be accounted for by the lack of medical equipment and pharmaceuticals in local hospitals, coupled with the relative qualifications of the physicians in the facilities. The ratio of primary care physicians (general practitioners, obstetricians, and pediatricians) to specialists has greatly improved and is more than twice the ratio found nationwide (33 percent versus 13.6 percent). Nevertheless, the ratio is still far below international standards; for example, the ratio is 70 percent in France and Germany.

Finally, the fact that pharmaceuticals are covered only in inpatient settings, with full copayment required in outpatient settings, may skew incentives for care: physicians may refer people to hospitals where drugs are provided free (at least formally) when outpatient treatment might be more appropriate.

EXHIBIT 4-1
NUMBER OF VISITS TO POLYCLINICS IN THE FEZ, DZHESKASGAN OBLAST, 1990-1993

	1990		1991		1992		1993	
	Number	% of Total	Number	% of Total	Number	% of Total	Number	% of Total
General Practitioners (internists, "therapists")	31,522	19.1	27,624	17.0	48,572	25.3	42,534	22.5
Obstetrician	9,438	5.7	7,909	4.9	12,984	6.8	11,688	6.2
Pediatrician	20,532	12.4	24,580	15.1	33,102	17.3	43,406	23.0
Surgeon	19,465	11.8	15,623	9.6	21,764	11.4	23,259	12.3
Citus/VD Specialist	14,363	8.7	13,141	8.1	16,630	8.7	14,117	7.5
Teenager Specialist	5,307	3.2	2,073	1.3	3,032	1.6	4,990	2.6
Tumor Specialist	197	0.1	85	0.1	197	0.1	435	0.2
Harcology Specialist	4,891	3.0	3,548	2.2	3,359	1.8	3,854	2.0
Psychiatrist	4,281	2.6	3,584	2.2	3,589	1.9	4,889	2.6
Physiologist	6,416	3.9	4,259	2.6	5,300	2.8	5,845	3.1
Endocrinologist	13,168	8.0	11,119	6.8	9,125	4.8	8,744	4.6
Cardiologist	0	0.0	191	0.1	191	0.1	0	0.0
Neuropathologist	10,759	6.5	10,106	6.2	4,599	2.4	0	0.0
Urologist	0	0.0	103	0.1	0	0.0	0	0.0
Contagienist	710	0.4	526	0.3	0	0.0	0	0.0
Dentist	24,079	14.6	38,087	23.4	29,228	15.3	25,416	13.4
Total	165,128	100.0	162,558	100.0	191672	100	189177	100

EXHIBIT 4-2
TYPES OF PHYSICIANS IN POLYCLINICS IN FEZ, DZHESKASGAN OBLAST, 1991-1993

	1990	1991	1992	1993
Primary care physicians*	5	4	8	8
Specialists	26	18	30	21
Ratio of primary care physicians to specialists	1:5.20	1:4.50	1:3.75	1:2.63

* includes general practitioners (internists and therapists), obstetricians, and pediatricians.

4.2.1.2 Technical Efficiency

Analyses of technical efficiency from 1990 through 1993, using data on several measures, had more mixed and less positive results:

- The number of hospital admissions declined from 6,215 to 4,561, or about 26 percent *(Exhibit 4-4).* The reduction is due in part to a shift of some patients to a new day-care center, but that does not explain the entire reduction. Expenditures for day-care patients were estimated to be 25 percent less than for inpatient care (using the model described in *Section 3),* freeing up resources for other purposes.
- Since the start of the MHI demonstration in March 1993, hospital admissions declined continuously, from 1,064 in the first quarter of 1993 to 964 in the first quarter of 1994. Again, the shift to day-care treatment does not entirely account for this decline.
- The average length of stay (ALOS) in hospitals has shown a general, though very slight downward trend *(Exhibit 4-6).* The absence of a significant decline is surprising given the detailed protocol and quality assurance standards in place, but this may be due to a more complex case mix after the shift of patients to day-care centers and to the lack of available equipment, supplies, and pharmaceuticals. It may also be due to relatively weak incentives to discharge hospitalized patients before the bed-day payment cap is reached, regardless of relative case severity.
- The number of occupied bed-days increased from an extremely low level of 224 days per year in 1990 to 313 in 1993 *(Exhibit 4-6).* Nevertheless, the level remains below the standards set by the federal Ministry of Health (340 days for urban areas). In part, this may be because of the greater difficulty for hospitals in predicting demand in less populated areas.
- The total number of patient-days shows a general decline for both inpatient beds and day-care centers. This is due to a reduction of the total number of hospital admissions, from 31.5 to 23.9 per 1,000 population as noted earlier, whereas the average length of stay remained stable.

EXHIBIT 4-3
INPATIENT CASES BY DIAGNOSTIC CATEGORIES IN HOSPITALS IN KARAJAL, 1990-1993

	1990		1991		1992		1993	
	Number	% of Total	Number	% of Total	Number	% of Total	Number	% of Total
Infection and Parasitic	348	5.6	519	8.3	742	13.2	597	13.1
Cancer and Neoplastic	53	0.9	60	1.0	28	0.5	34	0.8
Endocrinopathy	22	0.4	16	0.3	21	0.4	13	0.3
Blood and Homogenic	17	0.3	25	0.4	26	0.5	22	0.5
Psychiatry	27	0.4	35	0.6	57	1.0	50	1.1
Nervous and Sensory	214	3.4	169	2.7	162	2.9	86	1.9
Blood Circulation	499	8.0	499	7.9	407	7.3	260	5.7
Respiratory	1,432	23.0	1,515	24.1	1,225	21.8	1,015	22.3
Digestion	611	9.8	511	8.1	475	8.5	340	7.5
Urological	673	10.8	483	7.7	462	8.2	384	8.4
Pregnancy	1,204	19.4	1,224	19.5	934	16.6	906	19.9
Cuts & Hypodermic/Tissue	204	3.3	166	2.6	169	3.0	171	3.8
Muscular	395	6.4	561	8.9	425	7.6	236	5.2
Inherent Anomalies	8	0.1	10	0.2	14	0.3	12	0.3
Perinatal	12	0.2	4	0.1	10	0.2	8	0.2
Symptoms & Non-Indicative	25	0.4	18	0.3	6	0.1	6	0.1
Traumatic	471	7.6	472	7.5	451	8.0	421	9.2
Total	6,215	100.0	6,287	100.0	5,614	100.0	4,561	100.0

EXHIBIT 4-4
HOSPITAL BED CAPACITY AND NUMBER OF ADMISSIONS BY TYPE OF BED IN KARAJAL, FEZ, 1990-1993

	1990	1991	1992	1993
Hospital Bed Capacity				
Regular cases	200	140	135	135
Day-care cases	0	60	65	54
Total	200	200	200	189
Regular beds per 1,000 population	14.7	10.8	10.6	10.2
Admissions				
Regular cases	---	4,944	4,207	3,531
Day-care cases	---	1,343	1,407	1,030
Total	6,215	6,287	5,614	4,561

EXHIBIT 4-5
RATE OF HOSPITAL ADMISSIONS PER 1,000 RESIDENTS IN FEZ, 1990-1993

	1990	1991	1992	1993
Regular cases	---	25.3	24.0	19.6 135
Day-care cases	---	6.9	5.3	4.3
Total	31.5	32.2	29.2	23.9

EXHIBIT 4-6
HOSPITAL UTILIZATION IN KARAJAL, FEZ, 1990-1993

	1990	1991	1992	1993
Average Length of Stay (ALOS) (days)				
Regular Cases	—	13.5	12.7	13.3
Day-Care Cases	—	15.5	13.0	12.8
All Cases	13.7	13.9	12.8	13.2
Number of Occupied Bed-Days per year	224	318	304	313
Occupancy Rate (percent)	61.2	87.1	83.3	85.7

Two areas of concern were identified during the evaluation. One is the fee-for-service payment mechanism now in place for outpatient (polyclinic) care. Fee-for-service can be beneficial in the short term as a way to encourage greater provider autonomy and to promote primary and outpatient care over more expensive inpatient care. There are also strong administrative controls in place as a check against increases in the volume of unnecessary care. Still, the international experience of spiraling costs and volume would discourage its longer-term use except in limited instances such as preventive or "priority" services.

A second area of concern is hospital productivity. Some increase in hospital productivity could have been expected due to increased complexity of case mix as "simpler" day-care cases were shifted from hospitals. To test this, all hospital admissions were grouped into three "complexity" groups as described in *Section 4.1*. The analysis failed to confirm this. On the contrary, case mix was found to have changed little or not at all, while personnel increased by 9 percent. The analysis was limited by the partial nature of the available data, but it suggests that productivity may be declining rather than increasing:

- Case-mix analysis using ALOS shows that the share of medical or "therapeutic" patients treated for more than 20 days tended to decline, while the share of patients with an ALOS less than 15 days increased slightly. This suggests that the mix of cases includes a greater number of simpler cases. For surgical cases, the number of more complex and the simpler cases both increased, although the number of the intermediate cases—those with an ALOS from 15 to 20 days—decreased noticeably. Results were similar for gynecologic patients. In general, then, in all three of these main hospital units, the mix of cases has not significantly changed *(Appendix D).*

- Case-mix analysis using unit costs was performed for years 1991 and 1992 only, due to limited data. *Exhibit 4-7* presents the results by diagnostic category in order of increasing costs. The results show the decreasing number of hospitalizations in 1992 compared to 1991 for low-cost categories. In particular, there are decreases for acute respiratory infections, cholecystitis, gastritis, and some other cases that are more appropriately treated on an outpatient (polyclinic) basis. At the same time, some reduction of the number of the most serious cases—those that require more substantial resource use—also can be observed. For example, there is a reduction in the number of hospitalized patients with chronic bronchitis, pneumonia, and cardiology diseases.
- To better examine whether the average cost per case had changed, individual unit costs were weighted for each diagnostic category by number of admissions. Average cost per case was only 4 percent lower (21 percent compared to 17 percent), even after adjusting for diagnostic category.

Savings, then, may be due primarily to a lower number of admissions rather than to significant efficiencies or to lower average costs per case. Coupled with increases in personnel, this suggests that productivity has decreased since the start of the NEM. This evidence, while limited, may be useful for further work and analysis. If there are excessive labor resources in hospital settings, there may be an opportunity to shift labor resources to strengthen primary care or to strengthen specialized areas of care such as rehabilitative care or home care following hospitalization.

In sum, several observations can be made concerning efficiency in the FEZ demonstration:

- New methods of financing, payment, and management promoted structural changes that point to increased cost-effectiveness in the delivery of care. This is due in great part to changes in incentives for primary care providers.
- Changes in technical efficiency (at the facility level) are less positive, due to inflexibility on the part of hospital management in regrouping resources in response to demand.
- The influence of the NEM on allocative efficiency may be more significant than the transition to the MHI demonstration phase.
- Observations that MHI has had only limited influence, however, should be viewed as preliminary given the short period since implementation; a number of the new payment and quality assurance mechanisms may need more time to take full effect. The MHI demonstration also coincides with a worsening of the general economic situation in the country.

EXHIBIT 4-7
COMPARISON OF ACTUAL AND WEIGHTED ADMISSIONS
BY DIAGNOSTIC GROUP IN KARAJAL HOSPITAL, 1991-1992

	Number of Admissions		Cost per Admission (roubles)		Index/Cost per Admission	
	1991	1992	1991	1992	1991	1992
Acute Appendicitis Uncomplicated	56	86	86	592	0.6	0.6
Nephrolitis	11	18	88	885	0.6	0.8
Psychiatric Disorder	33	55	92	569	0.6	0.5
Acute Respiratory Disease	112	53	94	621	0.6	0.6
Burn	33	17	110	884	0.7	0.8
Cholecystitis	66	49	128	882	0.8	0.8
Diabetes	12	19	130	0	0.8	0.0
Bone Fracture	141	130	134	1,009	0.8	1.0
Kidney Infection	55	35	137	1,078	0.9	1.0
Rheumatism Active Phase	2	4	141	1,270	0.9	1.2
Hypertension	106	42	146	834	0.9	0.8
Coronary Ischemia	71	78	149	1,155	0.9	1.1
Neurosis, Neuritis	7	5	151	1,239	1.0	1.2
Chronic Rheumatic Carditiitis	9	22	151	1,041	1.0	1.0
Angina Pectoris	37	46	155	1,289	1.0	1.2
Gastritis	75	40	161	962	1.0	0.9
Stomach Ulcer	24	21	168	1,114	1.1	1.1
Stomach Ulcer/Duodenal	16	28	169	979	1.1	0.9
Bronchial Asthma	15	11	169	861	1.1	0.8
Acute Appendicitis Complicated	15	18	177	1,462	1.1	1.4
Anaemia	18	10	196	1,176	1.2	1.1
Acute Cardiac Thrombosis	25	15	207	1,220	1.3	1.2
Chronic Bronchitis	108	70	211	1,114	1.3	1.1
Rheumatoid Arthritis	42	32	224	1,551	1.4	1.5
Pneumonia	79	57	235	1,059	1.5	1.0
Chronic Coronary Ischemia	6	7	267	1,879	1.7	1.8
Acute Myocardia Infarction	11	10	276	2,199	1.7	2.1
Total	1,185	978	159	1,061	1.0	1.0

4.2.2 South Kazakhstan Oblast

The lessons and evaluation of the FEZ demonstration can be applied to South Kazakhstan as well. An important exception, however, is the potential influence and impact of voluntary health insurance (VHI).

Voluntary health insurance is regarded by the oblast authorities as a first step in the transition to an employer-based compulsory insurance fund system that would use the VHI structures as intermediaries and insurers for supplemental coverage. The existing scale of VHI is relatively small, covering less than 10 percent of the population. Nevertheless, it has a positive influence on the activity of the public sector which is apparent through new methods of performance-related payment, strengthened quality-control measures, selective contracting with providers, and increased interest in development and systematic collection of data for management. Specifically, it has been helpful in:

- Decentralizing decisionmaking. There are cost-accounting systems for each department of polyclinics and hospitals that operate under contract with VHI. In the Emergency hospital and the Oblast hospital, computerized systems have been developed to improve hospital operations and payment. More functions are being transferred to department heads. In the Emergency hospital, for example, each department head controls his or her own budget and is responsible for the effective utilization and creation of adequate incentives for personnel. Each department develops a salary and bonus structure and is responsible for evaluating each staff member. This creates an additional incentive for the effective management of existing resources.
- Increasing Productivity. The addition of new resources in general and new methods of payment under VHI coverage have encouraged increased productivity of labor and a greater interest in selective contracting by hospital administrators. For the last quarter of 1993, the Emergency hospital cared for more patients under VHI contracts than during the preceding nine months. Revenues can be pooled with the budget and other sources of funds, and these pools can be used to increase payroll and bonuses.[26]
- Increasing Incentives for Gaining Skills. Selective contracting by VHI companies with both physicians and hospitals means that personnel with higher skill levels benefit more from VHI contracts. Other personnel may consider improving their skills or upgrading their qualifications in order to participate.

Or, funds can be placed into a combined income and wage fund, which is then distributed on the basis of the wage rates and adjusted for each staff member's "coefficient of labor" activity—composed of several factors including the time taken to perform services, caseload, and "level of participation" (a measure of efficiency), and more intangibles such as degree of commitment. Poor quality of care, as measured by sanctions, would reduce an individual's coefficient.

- Encouraging Other Forms of Efficiency. Insurance companies set payments based on average lengths of stay in hospitals for each diagnostic group. This creates significant economic incentives and effects. The Emergency hospital has reduced ALOS by two days since it began contracting with VHI companies.[27] The success of payment standards based on ALOS have created further interest in resource-saving forms of medical care, such as day-care centers and home care centers.
- Increasing Consumer Choice. Patients who have insurance contracts can choose their own physicians and nurses and can choose the most skilled staff members. This can help to decrease opportunities for abuse and for extortion of informal payments from patients.

Nevertheless, it remains to be seen what share of the population will purchase voluntary coverage. Voluntary health insurance currently covers less than 10 percent of population. Hence, the potential for VHI influence on the effectiveness of the broader health care sector may remain relatively limited.

In order to build a system of compulsory health insurance in Kazakhstan, it may instead be necessary to undertake more large-scale measures aimed at increasing the efficiency of health care facilities:

- The selective contracting found in the voluntary health insurance sector should be extended to the entire public health sector; and
- Current methods of payments for medical treatment in the public health sector, which have weak or perverse incentives for efficiency, should be changed. Budgets for inpatient care, for example, are still based on bed capacity, which only promotes continued structural distortion.

However, the influence of voluntary insurance on the efficiency of management and the organization of medical care cannot be separated from its impact on equity of access and the availability of medical care. Restrictions on the availability of medical treatment for those who cannot purchase voluntary insurance may either directly or indirectly influence the efficiency of the health care sector as a whole.

It was noted by the Deputy Administrator that shortening the mean length of stay in the hospital by one day allows for the care of 48 additional patients each month.

5.0 QUALITY AND ACCESS

5.1 METHODS

The issues of quality and equity of access of care are closely linked in health services research and evaluation. For example, whether needed care is postponed or provided in a timely fashion may affect outcomes. The evaluation team incorporated these linkages in its design and analysis wherever possible, and it used findings in one area to test hypotheses in the other.

The conceptual construct for measuring quality uses the framework of Donabedian (1980; 1982) and others who define three dimensions of quality: structure, process, and outcome. "Structure" comprises the buildings, staff skills, personnel, equipment, and supplies necessary for appropriate intervention or care. "Process" comprises the mix of skills, services, and procedures actually used in providing care. "Outcomes" refers to actual patient outcomes and changes in health status. These three dimensions are conceptually different but not completely independent—for example, adequate processes of care cannot occur if proper inputs are unavailable.

The conceptual basis of adequate access to care is less easy to measure. Historically, access is measured in terms of utilization of services (Aday and Anderson, 1974), but other aspects are critical as well, including the timeliness, responsiveness, and appropriateness of services provided. Typically, the research draws on multiple measures to help piece together evidence on access.

The evaluation team examined how the new systems in the Dzheskasgan oblast demonstration area and the proposed demonstration in South Kazakhstan might affect quality of care and what had been the strength of the old system—relatively equal access to services by various socioeconomic groups. The approach relied on several sources of information: a) small-scale surveys of providers, personnel, and patients; b) key informant interviews and record reviews, c) analysis of cross-sectional and time-series data, and d) examination of documents containing qualitative information. These multiple sources helped the team "triangulate" disparate sources of information with more limited findings to develop a fuller picture of the potential impact on quality.

The evaluation was hampered because the demonstration represented a "second-phase" of changes, which followed several initiatives undertaken as part of the New Economic Mechanisms (NEM). The quick succession of interventions by the same local leadership blurred perceptions and did not always allow clearcut "before" and "after" observation points.

Several new and existing surveys were utilized. In the FEZ area, two patient surveys were conducted. The first was conducted in October 1991 by the TMO, which surveyed 900 households in Karajal and gained answers from 771 families—an 85 percent response rate. That survey focused on patient access to and satisfaction with care and sought to establish whether the changes instituted under the NEM had any effects on consumers. In early 1994, a second survey was conducted of 100 patients who had recently interacted with the health care system. Patient responses were then linked to reviews of their individual medical records to better examine the reasons for complaints and to develop identifiable approaches to avoid similar problems in the future.

In addition, a provider survey was conducted in the FEZ in late 1991, again to assess the impact of the NEM on provider satisfaction and any subsequent changes in behavior. It was also used to identify areas of possible future change.

Another survey was conducted specifically for this study, and it developed an instrument of quality measures along the dimensions of structure, process, and outcomes. It asked questions about access to care concerning both specific substantive areas (timeliness, appropriateness) and overall access by various socioeconomic groups, particularly the unemployed, the poor, children, women, and the elderly. The instrument was developed following the initial Team Planning meeting in March 1994 and was subsequently revised several times, both in Almaty and prior to its use in Karajal, in order to incorporate key design elements of the demonstration as more information became available (the final instrument is reproduced in *Appendix E).*

The survey was used to systematically measure perceived technical quality changes before and after the institution of the insurance system. It further was taken to help establish a baseline on quality. Two to three key staff members (e.g., administrator, chief physician, chief nurse) were surveyed in each of five facilities in the FEZ area (n=12). The survey used an ordinal scaling approach to measure relative changes over time. Answers were provided on a scale of 1 to 5, with increasing numbers representing relative improvement in the specific area questioned since the institution of the health insurance system. A rating of 1 or 2 meant that the situation was "much worse" or "worse," respectively; 3 meant there had been "no change"; and 4 or 5 meant "improved" or "greatly improved," respectively.

The evaluation team also conducted independent interviews with key actors in the quality assurance (QA) process, such as the QA staff of the insurance organization.

Selected data analyses also were performed to compare differences across settings and over time. For example, did the number of visits change over time and for a specific population group? Did referral rates change according to levels of severity or for other reasons? Did critical preventive services change over time as policies changed on the FEZ demonstration? Such analyses help to test hypotheses and to identify new ones for further examination.

The FEZ area compiled available data from 1990 through 1993; South Kazakhstan data were more sporadic and incomplete (in part, because of the much larger area involved). Because the health insurance demonstration has yet to be implemented in South Kazakhstan oblast, the evaluation of quality and access in this area was based on a review of plans and changes in the health sector to date. Key informant interviews were used to identify possible issues related to mandatory health insurance, voluntary health insurance, and care at the provider and facility levels. Information was reviewed and examined in light of the findings from Dzheskasgan. In both oblast areas, the team reviewed current monitoring and evaluation systems for management and policymakers.

5.2 FINDINGS

5.2.1 The FEZ Demonstration

In the FEZ demonstration area there was some evidence as well as a clear perception among local providers and administrators that quality of acute care has improved to some extent since 1990. This improvement can be attributed to at least three factors:

1. Increases in staff salaries and incentive bonuses. Salaries for physicians, nurses, and staff increased from 50 percent to more than 150 percent of the base salary recommended by the federal MOH beginning in 1991 and remained at this higher level in 1994 *(Exhibit 5-1).* These pay increases have the following effects on staff:

   - Improved morale and a greater sense of commitment;
   - Improved team activity and coordination;
   - Greater interest in improving professional knowledge and skills;
   - Decreased interest in finding alternative types of employment; and,
   - Some increased anxiety about losing employment, especially among aids and nursing staff (dismissals are more frequent at this level).

   The surveys (*Exhibit 5-2*) showed consistently high scores on personnel-related changes.

   In the longer-run, these pay increases also may help attract and retain high-quality staff to this more rural area, which otherwise may have difficulty competing for staff with larger urban areas.

EXHIBIT 5-1
RATIO OF AVERAGE FEZ MEDICAL STAFF SALARIES TO FEDERAL MOH-RECOMMENDED SALARIES

	1991	1992	1993	1994
Staff Aides	1:2.6	N/A	1:1.5	1:2.3
Nurses	1:2.6	N/A	1:1.5	1:1.9
Physicians	1:2.5	N/A	1:1.4	1:1.8

N/A = not available

2. Quality-assurance activities and the use of provider penalties. Under the NEM, a system of indicators of poor quality care were developed, as was a scale ("valuation of defects") that reflected the relative gravity of mistakes. These indicators were used in determining the relative bonuses awarded to staff on an annual basis. The penalties were developed at the TMO level as a mechanism for changing behavior. The contracts between staff and management also incorporated quality standards for care.[28] Finally, the incentives under the primary care group model were mostly positive—promoting primary care, promoting outpatient care over inpatient care, and referring the patient for more specialized care only when needed.

   Under the health insurance demonstration, a number of steps were taken to increase quality assurance. The insurance fund organization routinely checks claims for fraud or duplication, but it also reviews medical records for appropriateness of care and general quality of care. Record reviews are carried out by physician experts employed by the insurance organization and are based on new protocols developed at the end of 1992. Several hundred protocols (165 for outpatient surgery alone) were established by local medical teams, using both process and outcome standards and incorporating both federal MOH standards and local practice standards. The protocols define the minimum set of treatment, tests, and procedures needed to complete treatment of each illness, along with an expected outcome indicator (e.g., no remission within two years no ulcers). Monetary penalties are levied upon the TMO for violations, which amount to 5-10 percent of total payroll; the TMO, in turn, determines which specific providers are at fault.

   Currently, each inpatient admission record is reviewed and a sample of outpatient cases (stratified by physician) are checked. The use of penalties may have a "sentinel" effect on toughening internal peer review processes within some facilities (these processes were in place under the Soviet system and have continued in some places).

   These several hundred protocols will need to be constantly updated to keep pace with changing medical practices, a process that could prove cumbersome. Failure to keep them up to date could lead care to lag behind medical innovations, or worse, it could discourage new approaches to treating illness. The physician-expert review of charts also could prove to be unwieldy outside a small demonstration site. Several alternatives are considered in the next section.

At the same time, little or no information was available on the specifics of the indicators or standards, which made it difficult to evaluate the effectiveness of the approaches used under the NEM.

EXHIBIT 5-2 (2 pages)
SURVEY RESULTS OF PHYSICIANS AND ADMINISTRATORS
ON CHANGES IN QUALITY AND ACCESS TO CARE
SINCE INITIATION OF HEALTH INSURANCE DEMONSTRATION (FEBRUARY 1993)

	<---Scale--->	
1.0 Much Worse	3.0 No Change	5.0 Much Better
AVAILABILITY OF SUPPLIES AND EQUIPMENT		
surgical supplies (overall)		
pins and plates		1.5
monitoring equipment		3.0
provisions for fixing fractures		1.6
		1.5
other supplies (overall)		1.0
alcohol		2.4
cotton		2.2
syringes		3.4
needles		3.4
gloves		2.8
thermometers		2.4
micro-slides		2.5
other		2.4
equipment (overall)		2.4
radiologic		3.0
spare parts		1.5
X-ray film		2.3
contrast medium		2.0
diagnostic		2.3
pathology/reagents		1.5
PHARMACEUTICALS		
supplies (overall)		1.8
antibiotics		1.5
vaccines		2.2
aspirin		1.4
essential (overall)		1.5
nonessential (overall)		1.4
appropriate use		3.2
PERSONNEL		
numbers of staff		3.0
mix/improved team activity		4.0
training programs		3.8
professional knowledge/skills		4.0

EXHIBIT 5-2 (2 pages)
SURVEY RESULTS OF PHYSICIANS AND ADMINISTRATORS
ON CHANGES IN QUALITY AND ACCESS TO CARE
SINCE INITIATION OF HEALTH INSURANCE DEMONSTRATION (FEBRUARY 1993)

<---Scale--->		
1.0 Much Worse	3.0 No Change	5.0 Much Better
HOSPITAL CARE		
use of services (overall)		4.5
surgical services		1.0
diagnostic		2.0
other		2.7
inappropriate admissions		3.7
inappropriate referrals		3.1
duplication of tests		3.0
average length of stay		3.0
early discharges		3.0
misdiagnosis		4.5
POLYCLINIC CARE		
preventive services		3.5
detection of cancer in early stages		4.0
detection of TB in early stages		3.0
percentage of chronically ill monitored		2.0
misdiagnosis		4.0
OVERALL OUTCOMES OF CARE		3.4
surgery-related		3.8
medical-therapy related		4.2
ACCESS TO CARE		
availability of services (overall)		3.8
for rural groups		3.2
for poor and unemployed groups		3.2
for upper-income groups		3.0
elderly		3.0
women and children		3.0
disabled		3.0
waiting times (polyclinic)		4.0
physician office		4.0
lab tests		4.5
waiting times, hospital lab tests		3.5
change in access (overall)		3.2

3. Use of more specialized care facilities rather than hospitals. In 1990 the TMO found that up to 35 percent of hospitalized patients could be moved to day-care centers, which are facilities where patients receive inpatient care during the day and are returned to their families at night. These facilities require fewer staff resources and thus free up resources for more critically ill patients.

The periodic surveys of providers and consumers conducted by the TMO and the HI organization itself also have demonstrated interest and willingness to continually improve the quality and access to care in the FEZ demonstration.

There is also some evidence from the survey results *(Exhibit 5-2)* that access to care has not deteriorated for specific socioeconomic groups such as women, children, the poor, the elderly, and the disabled. There is further survey evidence that access has improved on some measures—specifically, waiting times are reported to have been reduced in polyclinics for seeing a physician and for lab tests, and to have been reduced for lab tests in hospitals.

Patient satisfaction, as measured in a 1994 HI organization-conducted survey, appears high. The number of favorable responses on quality in hospitals and polyclinics was consistently above 90 percent. The most negative response concerned the quality of food served, with which 30 percent were not satisfied. The 1994 results also show improvement over comparable questions posed in its October 1991 survey of consumers and patients.

There are also a number of less favorable findings. Survey results show substantial problems in several areas:

- Old and outdated buildings, such as the children's sanitorium;
- Outdated equipment;
- Inadequate supplies (although there was some perception that the supply of needles and syringes had improved); and,
- Severe shortages of pharmaceuticals.

Many of the responses indicate not only that there are problems, but that there has been a worsening or deterioration of conditions since the start of the health insurance experiment. These survey responses are consistent with the empirical analysis of expenditure patterns for equipment and supplies in *Section 3.* Most respondents attributed the problems to the general deterioration of economic conditions, rather than to anything specific to the HI demonstration.

More worrisome is the fact that preventive services do not seem to be increasing, and may be decreasing, especially vaccinations and contraception services *(Exhibit 5-3).* The reason for this is not clear, but one hypothesis is that fee-for-service payments for all outpatient services may dampen incentives for physicians to provide preventive care. These services may need to be monitored in the future.

Finally, there are no separate, "earmarked" funds for traditional public health activities. Once the HI demonstration began, all government funds became part of the general HI fund. While this is not necessarily an issue of concern at this point, it may be important to set aside specific amounts both for ongoing epidemiologic monitoring and as a reserve for unexpected or catastrophic events.

EXHIBIT 5-3
PREVENTIVE SERVICES PROVIDED IN FEZ DEMONSTRATION AREA, 1990-1993
(NUMBER OF SERVICES RENDERED)

	1990	1991	1992	1993
Vaccination	20,016	18,300	19,997	15,015
Preventive Maintenance	9,294	4,844	10,853	9,125
Contraception Services	1,417	1,657	1,392	1,035
Total	30,926	24,801	32,242	25,175

5.2.2 South Kazakhstan Oblast

The impact of changes on quality and access in South Kazakhstan are much less clearcut and potentially more controversial than in the FEZ demonstration area. However, there are some parallels with the FEZ demonstration.

A number of hospitals and polyclinics have increased physician salaries and initiated incentive bonuses based on productivity and quality.

No specific quality-assurance (QA) processes have been identified for the insurance system demonstration; each intermediary has discretion to initiate its own activities. The accreditation of providers and the licensing of insurers is carried out by the oblast health department. However, several hundred treatment protocols have been developed and are in use in this oblast (as in the FEZ demonstration), again using a mix of federal MOH standards and locally developed standards. Use of the protocols to determine payment methods and/or penalties for poor quality is at the discretion of the facility and does vary. Concern about updating and maintaining the flexibility of treatment practices apply here as in the FEZ demonstration.

Innovative approaches for more specialized care settings also are apparent in this oblast, including family practice offices outside the polyclinic, home care services, and new outpatient surgery centers. These can improve both quality and access. In the "family doctor" demonstration, a substantial shift occurred in relationships between physicians and patients: these freestanding office physicians tend to serve the family as a whole rather than each member of the family (versus in polyclinics where physicians are responsible for adults only and where children are served by pediatricians). In addition, these physicians can have closer contact with their patients because they are located in their neighborhoods. One analysis of the South Kazakhstan demonstration made the following comparisons:

- Family doctors make more home visits for children under 1 year of age (14.6 per 1,000 residents versus 12.3 by pediatricians in polyclinics);
- Home visits to adults by family doctors is higher (372.4 per 1,000 residents versus 267.9 visits to internists employed by polyclinics);

- The number of emergency calls is lower for family doctors (3.5 versus 4.5 per day), which the study attributes to closer patient contact.[29]

In contrast to the FEZ demonstration area, however, the initiatives to gain new sources of private funding in South Kazakhstan have led to the purchase of increased equipment, supplies, and pharmaceuticals. Voluntary insurance companies have increased utilization of technologies, equipment, and supplies. Voluntary coverage also has been used to purchase additional pharmaceuticals, and separate, private pharmacies have been established for the use of covered populations.

Also in contrast to FEZ, much of the new, private corporate funding for facilities has been invested in new buildings, equipment, and technology, to improve both plant structure and facilities' competitive positions for gaining selective contracts and voluntary insurance patients. Using funds in this way may also reflect that there is less flexibility in using government budgets for capital improvement or in shifting funds across budget categories.

Other activities point to improved quality and access, such as a) increased consumer choice of physicians and hospitals; b) performance-related payment methods; c) tougher requirements for medical staff skills (accreditation); and d) information and monitoring systems. For example, voluntary insurance has encouraged tougher skill requirements for medical personnel. The option to care for patients having voluntary insurance contracts is now given to a relatively small team of skilled physicians based on accreditation criteria developed within the hospital. In the Emergency hospital, only 15.5 percent of physicians, 9.4 percent of nursing staff, and 1.1 percent of staff aides have the option of caring for voluntary insurance patients. Discussions with administrators and other facility decisionmakers indicate that tougher standards allow progress away from "groundless" wage-leveling, create competition among the staff members, improve work quality, and promote the general improvement of skills and qualifications.

Nevertheless, the use of voluntary insurance coverage for some but not for all may create a new two-tiered system of access. Providers may have incentives to provide two levels of quality and access depending upon coverage. On the one hand, new resources in the health sector may increase availability and quality for all patients, regardless of coverage status. On the other hand, the share of medical resources available (e.g., bed capacity, physicians' time, diagnostic tests) to voluntary insurance patients and to public-pay patients may increasingly diverge over time.

Another potential problem is that the voluntary insurance market is not currently structured to guarantee availability and renewability of coverage regardless of one's health status. The ability to refuse coverage due to preexisting conditions such as cancer and tuberculosis encourages risk selection on the part of insurance companies and further encourages segregation of sick patients from relatively healthy patients under public and private coverage, respectively. If a two-tier system of care emerges, it would be the sickest patients who would have poorer quality and access to care.

It should be noted that it was not clear what adjustment was made, if any, for the relative demographic mix or the health status of the compared samples.

6.0 CONCLUSIONS, RECOMMENDATIONS, AND OPTIONS FOR ACTION

A number conclusions and recommendations follow from the analyses and findings of this evaluation, and these are presented below. This section develops a number of options for action to be considered by decisionmakers which generally follow the four areas of the evaluation: adequacy of financing, efficiency, quality of care, and equity of access. Some of the options for action are more applicable to one site than the other; others are applicable to both or to the country in general. The discussion clarifies the applicability of the actions where appropriate.

6.1 FINANCING

1. The structure, concept, and benefit of a separate, "earmarked" health insurance fund are good and should be maintained and expanded. The advantages of this approach are several:
   - increasing stability, predictability, and sustainability of funding available for health care;
   - lessened dependence upon the annual discretionary budget process at the central level;
   - creation of an impartial management structure for collection and use of funds; and
   - potentially greater autonomy and decentralized decisionmaking if "off-budget."

2. Because of the possible negative impact a new payroll tax on capital formation and loss of jobs—particularly on new and small businesses—alternatives should be developed now. There are several issues:
   - The new payroll contribution approach may work for some interim period in areas where the employment base is composed of many large state-based or joint-stock enterprises with substantial market power, such as in South Kazakhstan.
   - New or small firms may be hurt by the imposition of an additional payroll tax, particularly if these are new firms with little capital. A new payroll tax could encourage informal "cash"-based transactions by businesses outside the formal economy, effectively translating into lower tax revenues from employers for state needs and programs.
   - Participation and compliance with the payroll tax is low in the FEZ area, and South Kazakhstan can expect similar problems, although to a lesser degree because of the use of the tax collection system.
   - A new payroll tax could mean lower funds for capital formation, or the tax could be passed from the employer to the employee either as lower wages or fewer jobs. In other countries, the experience has been that the jobs eliminated are entry-level jobs and that, in terms of demographics, women and minorities are affected more. In general, it also means a continued drag on general economic development.

3. There are several options to be considered as immediate alternatives to a new payroll tax:

   - The payroll contribution could be taken from the current Social Insurance and Pension Fund. The Social Insurance and Pension Fund could be restructured, without any new increases in tax rates, and the proposed additional 4 percent payroll could then be eliminated. This approach would improve participation and compliance and better ensure a timely flow of funds for health care (even though the new tax will be collected through the Department of Taxation). The World Bank (1993) found that Kazakhstan allocates more resources (as a percentage of GDP) for cash benefits than other countries in Eastern and Western Europe and recommended a similar restructuring and the better use of this fund.
   - If it is determined that a new payroll tax is the only option, special consideration should be given to small firms (those with fewer than 100 employees), such as a "tax holiday" for three to five years. This is most appropriate in areas such as FEZ, where a small number of large firms employ most workers.
   - The payroll contribution could be split among employers and employees—for example, a 3 percent employer payroll tax and 1 percent employee payroll tax. This would involve citizens more actively in their health care costs and would free up funds for needed capital formation.
   - The new 1 percent payroll contribution *from employees* could be considered for individuals in upper-income brackets *only* (e.g., managers of state-run enterprises, banks, insurance companies, etc.). This would improve equity and would represent a needed first step in consumer involvement in the health sector.
   - The existing pension fund could be used to cover health care costs for those over age 60. The percentage of the population of Kazakhstan over age 60 is very small compared with other countries *(Exhibit 1-1).* In addition, this would encourage more interest in the appropriate health care of the elderly relative to other segments of the population.

4. The central and oblast governments are moving in the right direction in using fewer budget categories for health care spending (e.g., payroll, fringe benefits/ training, and capital development and in proposing use of capitated payments to the MHI fund instead of the line-by-line allocations made for 18 separate categories as in the past *(Sections 1.3 and 2.1).* However, the unpredictability of the capitated rates—which are based on annual legislative appropriations—could create problems for the MHI organization's ability to predict and manage funds prudently and to remain solvent. Therefore, the federal government and central oblast must commit to a fixed capitated payment rate for the unemployed, the elderly, and the disabled. This rate should be:

   - based on a fixed *real* rate;
   - risk-adjusted, based on expected utilization needs (e.g., the disabled and elderly versus others), with age and gender adjustments at a minimum; and
   - updated periodically for a)inflation, b) demographic change such as the aging of the population, c) changes in practice patterns and new technology, and d) epidemiological events.

5. Health input price indices should be developed for each oblast (or subsections thereof as necessary) for updating sources of revenues into the MHI fund and for updating payments to local medical associations and providers. A general consumer price index is currently available, but the evaluation team did not identify adequate price indices for the health sector. Further work in this area could prove problematic given the lack of market-based prices in many instances; nevertheless, it is an important component of a workable health insurance system.

6. Other, new sources of revenue should be considered:

   - Nominal, flat copayments might first be imposed at the outpatient and inpatient facilities in Karajal in the FEZ area and in Chimkent City in the South Kazakhstan oblast. These co-payments would be collected and retained by the facility and could be "earmarked" for purchase of equipment, supplies, and pharmaceuticals. Such targeting of revenues could be especially helpful in the FEZ.
     - Instituting copayments in Karajal or Chimkent alone, at the level of 2 tenge for an inpatient admission and 1 tenge for an outpatient visit, would generate new revenues of at least 5 to 10 percent over the current budget, assuming no decrease in utilization. Each additional 1 tenge copayment would generate additional revenues of 5 percent of the current level. (These estimates include waiving the copayment for low-income groups and for special populations such as the disabled and waiving the copayment for preventive services).
   - Some changes in the defined benefits package could be considered, such as dropping dental benefits for adults. Adults could begin to spend out-of-pocket for these services, or companies could voluntarily cover these services for their employees, which would save MHI revenues for other priorities such as new buildings or new services.
   - Improved efficiencies, such as lowering the average lengths of hospital stays and shifting a portion of inpatient cases to outpatient, could be instituted for cost savings (as discussed in *Sections 3 and 4).*

7. Over the longer term, other alternatives to employer-based funding should be considered, such as an "earmarked" value-added tax (VAT) fund. While, a payroll tax is less likely to have as much fluctuation as taxes from residual income, wages tend to lag other production costs and consumer prices under conditions of inflation.

6.2 HEALTH INSURANCE FUND MANAGEMENT AND ORGANIZATION

6.2.1 Mandatory Health Insurance

1. The Mandatory Health Insurance (MHI) organization should not be discouraged from building reserve funds over time. One current disincentive to building such reserves—which should be eliminated—is a federal requirement that the fund pay a 30 percent "profit tax" on surplus health care revenues at the end of the year.

2. The MHI organization should provide only health insurance coverage, not life, property, and other types of insurance. Currently, the MHI organization in the FEZ area demonstration sells other types of insurance. Offering such additional coverage carries the risk of shifting public revenues to cover claims of non-health insurance subscribers.

3. The MHI fund revenues should be allocated to four separate accounts or funds:

   - payments to providers;
   - a reserve fund;
   - a fund to promote preventive activities; and
   - administrative expenses.

   This approach would allow spending to be more predictable, transparent, and controllable. Specific allocation shares could be approved by the local administrator (or later by the oblast MHI fund). Purchases of drugs and medical equipment, subsidies to medical facilities, and so on would be made only from the fund for payment to providers.

4. Insurance organization administrative costs should moderate over time. The current 3 percent for MHI payments to intermediaries in South Kazakhstan oblast may be too low for the initial start-up phase, given the higher up-front capital costs and collection costs. In the FEZ area, MHI administrative costs are about 7.5 percent—in part due to the relatively small scale and scope of the demonstration and in part due to start-up costs. A preferred approach would be to allow administrative costs to be 5 to 7 percent in the first few years and to lower them to 3 percent in later years.

5. The use of available MHI funds (e.g., funds that are not being used in the short-term) for outside "liquid" investments should be limited to the "reserve fund" and the "preventive measures fund."

6. The MHI should be audited by an independent accounting firm on a regular basis.

7. The oblast government should prepare to extend the MHI organization and fund to the entire oblast. A broader geographic base would have several advantages:

   - It would increase the fairness of the system: Employers are spread unevenly across rayons of the oblast, and some rayons will have difficulty raising enough funds to cover the medical costs of their residents.
   - Central reserves would be useful as a subsidy to local MHI schemes: A substantial portion of industrial enterprises face significant financial problems, at least in the short run.

   An oblast program of MHI benefits would allow all residents of the oblast should receive a similar package of basic medical benefits:

   - A broader population base would decrease the potential for risk selection by competing insurers, especially if multiple insurers develop within an area or if intermediary areas become relatively small. A weighted or risk-adjusted capitation formula can better ensure competition on price and quality, not risk selection.

Taken in this context, the FEZ area demonstration is only a fragment of the system, and it needs to be integrated into the oblast MHI system, which may be established shortly. Likewise, the expected experiments in Chimkent and the three adjoining rayons of the South Kazakhstan oblast should be designed as elements of the overall oblast MHI.

Thus, the MHI should be developed both "top down" and "bottom up." Local initiatives must be combined with standards and regulations set at the oblast level. An oblast-level MHI organization must:

- Provide the ground rules. The oblast MHI organization also should act as regulatory body for the entire oblast. (In the case of the FEZ area demonstration, it would remain an organization—perhaps independent legal entity—working under the oblast regulatory and financial scheme.) The regulations to be set may include:
  - a procedure for collecting payroll contribution;
  - a weighted capitation formula for allocation of MHI contributions to insurers;
  - a capitation rate of budget allocations for the non-working population;
  - methods of payment to medical care providers;
  - rates of payment differentiated by types of provider;
  - the market structure of the MHI (e.g., single or multiple purchasers in each area; state-owned, joint ventures, or commercial insurers);
  - interaction between the MHI and other types of insurance (e.g., whether insurers can offer voluntary health insurance or life insurance);
  - medical standards with specific requirements for the process and the outcome of diagnostic and curative work;
  - a procedure for setting aside and allocating reserves and for using temporarily available funds; and
  - the licensing of insurers that do not comply with the rules of the MHI.
- Develop an accurate capitation formula;[30]
- Ensure that standards are met; and
- Serve as the "backstop" for financial viability. This implies use of the oblast MHI reserve fund to support local insurers when they encounter budget shortfalls due to higher than predicted expenses. The allocation process should secure financial viability and at the same time encourage insurers to be cost-effective. Insurance liability can fluctuate significantly from year to year, even for large funds like the U.S. Medicare program, which covers 35 million individuals. Insurers should be protected against the major portion of unexpected losses (say 90 percent) and should be responsible for the rest.

This implies setting fixed rates of capitation allocations for the local insurers, using demographic variables (e.g., age and gender), clinical variables (e.g., diagnosis), and perhaps prior use of services (see, e.g., White House Task Force on Risk Adjustment, 1993).

6.2.2 Insurance Organization and Intermediaries

1. The MHI fund should guarantee insurance intermediaries timely and adequate funding, regardless of compliance rates. The current demonstration design for South Kazakhstan does not ensure full or timely payments to intermediaries. If participation and compliance rates drop, payments are allowed to lag indefinitely, with intermediaries forced to use reserve funds. Private intermediaries should not be forced to shoulder the burden of problems stemming from inadequate MHI funds, and steps should be taken to ensure that the MHI fund remains solvent. This is especially crucial in the early phases of the demonstration. Options that may be considered include:

   - Establishing a government reinsurance fund, paid for through a small set-aside from general HI funds;
   - Establishing reserve requirements at the outset and upholding them;
   - Beginning to collect funds at some fixed period prior to their use (e.g., 3 to 6 months) to ensure solvency and timely payments.

2. Intermediary assignments should be re-bid by geographic area every two to three years and should be awarded to the lowest bidder. Bids could be sought for both administrative and health care services, which would create incentives for utilization management by the intermediaries. Both state-run and private intermediaries should compete.

3. The management of VHI intermediaries in South Kazakhstan oblast should include a state-backed solvency/reserve fund. The VHI intermediaries are relatively small organizations (currently with 15,000 to 40,000 VHI subscribers) with largely untested staff and expertise, and the risk of poor management and subsequent insolvency—especially in the early years—therefore may be significant.

4. Either the MHI organization or the intermediaries should promote further changes in the structure of care to increase both competition and consumer choice in order to improve resource allocation and provider performance. There are several steps that may be considered:

   - Encouraging formation of new medical groups within the framework of the MHI fund and VHI policies;
   - Restructuring polyclinics to be more autonomous group practices of physicians, paid on a capitation basis;
   - Initiating competitive contracting with providers for specified services through open bidding and negotiation of payment rates. For example, selected inpatient services could be contracted to polyclinics, or selected hospitals could be awarded contracts to provide specialized services currently provided by all hospitals (as long as services are not dependent upon guaranteed transportation such as emergency care). Selective contracting can promote economies of scale (efficiency) and can improve quality (specialized centers of care).

5. The VHI and intermediary organizations should immediately emphasize improved utilization management—a recommendation that is relevant to the South Kazakhstan oblast demonstration. There is some evidence that this is already occurring in some areas, such as the NEM-related policies followed by the Emergency hospital and Phosphorous hospital and the use of DRG-like payments by Unit. The MHI and the local oblast Department of Health could further facilitate this process by:

   - Developing and sharing strategies for implementing more cost-effective care practices; and
   - Encouraging development of standardized (i.e., comparable), routine, ongoing evaluation and monitoring activities for such indicators as:
     - occupancy rates;
     - average lengths of stay by disease category;
     - referral patterns, such as polyclinics to hospitals, from general practitioners to specialists, and from hospitals in the demonstration area to outside hospitals;
     - physician prescription patterns and referral rates;
     - use of specialists' time in polyclinics and hospitals with the objective of improved sharing of functions; and
     - appropriateness of hospital admissions in general.

   Such evaluation and monitoring would improve efficiency and quality. Incentives could be developed to encourage such activities, such as bonuses paid out of the revenues generated by penalties or a special set-aside fund within the MHI organization to carry out these functions.

6.2.3 Voluntary Health Insurance

1. Mandatory and voluntary health insurance (VHI) should be combined under the Mandatory Health Insurance demonstration in order to supplement available MHI contributions with private financial resources and to increase consumer choice (e.g., for additional services not included in the benefit package or better hospital rooms).

2. The local administration should closely manage VHI to ensure that mandatory funds do not shift to private-pay patients. Several areas of regulation should be considered:

   - The relative shares of medical resources available for voluntary insurance patients (e.g., bed capacity, physician's time, diagnostic tests) should be clearly specified.
   - The VHI intermediary organization should separately account for MHI and VHI spending, according to such categories as a) insurance contributions, b) payments to providers, c) formation and distribution of reserve funds, d) use of temporarily available funds, and e) income distribution, in order to help prevent use of public money for private, commercial purposes.
   - There should be no duplication of coverage between MHI and VHI, and benefits should be clearly specified according to diagnosis, age, and gender.

- There should be no complementarity of coverage that could engender greater demand for services paid for by the public fund. For example, coverage by VHIs of polyclinic copayments could increase the number of patient visits or tests beyond what is necessary.

3. Regulations should be developed to govern the market for private health insurance, including:
   - There should be standardized packages of VHI medical benefits to promote informed consumer choice based on comparable price and quality;
   - Provisions should be implemented to guarantee availability and renewability of coverage regardless of health status (the ability to refuse coverage because of pre-existing conditions such as cancer and tuberculosis encourage risk-selection behavior on the part of insurers);
   - Payout-revenue ratios should be closely audited and monitored (these ratios are now set at 0.9 for South Kazakhstan oblast).

4. All VHI companies should be allowed to sell policies anywhere, with no geographic constraints, in order to encourage competition, to lower prices, and to provide greater availability of coverage.

6.3 EFFICIENCY

6.3.1 Structure of Health Care Delivery (Allocative Efficiency)

1. Physicians should be allowed to form solo and small-group practices for provision of primary care services. There are at least two options:
   - Transforming the existing network of polyclinics into solo practices and group practices, while maintaining the legal structure of the polyclinic; and
   - Starting legally independent general practices.

   The first option is being tested in Chimkent City and has proved promising, revealing several advantages to freestanding primary care groups. However, starting the new offices requires substantial investment in office space, medical equipment, and supplies. In addition, maintaining the legal structure of the polyclinics maintains the current inefficiencies of polyclinics arising from the dependence of the staff on the polyclinics' administrative decisions, the lack of economic incentives, the duplication of function between specialists in polyclinics and hospitals, and the absence of competition among general practitioners. The creation of polyclinics with a defined catchment area also precludes forming a market environment or allowing choice of primary care provider.

   On the other hand, the second option emphasizes group rather than solo practices. In fact, the skill level of most polyclinic physicians may not be high enough to start solo practice without support from specialists. The first group practices may include internists, pediatricians, obstetricians, nurses, and support personnel.

The groups of primary care providers (APTKs) in the FEZ area could be one model, with the following modifications:

- The APTK structure should be extended and given greater autonomy;
- Group practices should be allowed to remain on the premises of the polyclinics but to become separate legal entities—that is, they should be allowed to contract directly with health insurers for provision of care under the MHI system; and
- Group practices should be allowed to contract with polyclinics for the use of medical equipment and support services.

Following the formation of such primary care groups, an open registration or "season" could be announced during which citizens would be allowed to choose polyclinics and primary care physicians. Catchment areas would be broken up. Freestanding group practices would draw patients regardless of their place of residence. Their budgets would be determined primarily on a capitation basis. Group and solo practices could be allowed to lease space on the premises of polyclinics, with the rent included in the budget provided by the insurance carrier. After some period of time, the best group practices could be allowed to purchase their premises and they could be allowed to become private, non-profit organizations.

The proposal to restructure polyclinics into group practices, while well-grounded, does not imply that polyclinics must be dismantled. On the contrary, they could be adapted to carry out new, multiple functions as both group practices and as community centers, as in many Western countries. These polyclinics could continue to be responsible for some diagnostic procedures, consulting, community care, and other functions that cannot be conducted by group practices. They also could continue to concentrate on specialized labs, expensive diagnostic equipment, physiotherapy, rehabilitation units, and the like.

2. Specialist care should be integrated between hospitals and polyclinics. Payment for specialist care in polyclinics should be "bundled" or "packaged" with payment for inpatient specialty care as an integrated sector of secondary care. Specialists currently employed by polyclinics would be operationally and financially integrated with hospitals, and specialists would continue to operate in both hospitals and outpatient departments, as is current practice in most other Western countries. This could decrease the duplication of specialist functions between polyclinics and hospitals and, over the long term, could decrease the number of specialists. A program to retrain specialists in primary care could be a part of this overall strategy. It is important to link the integration of specialists with the process of setting up separate solo or group practices of general practitioners (described above). This approach could be tested at demonstration sites over several years.

3. Specialized or "tertiary" care structures should be established for rehabilitative care, skilled nursing care, and long-term care. Such structures could be established within hospitals or set up as separate legal entities. There is some accumulating evidence that hospitals may be overwhelmed by relatively easy cases and by rehabilitation cases. This approach is an extension of the day-care center approach already begun and would allow hospitals to focus on acute care.

4. Labor standards should be revised. Decreasing productivity was found in hospitals in the FEZ demonstration, where changes in case mix were not accompanied by staff cutbacks or by restructuring of extra hospital personnel. This can be attributed to outdated labor standards, established in a top-to-bottom way regardless of volume or case-mix. New standards would facilitate the transition to a new payment system.

   In general, standards should be decentralized to the level of the hospital administrator. Standards could be based on several measures:

   - Selected workload indicators by department, both quantitative and qualitative;
   - Labor standards in terms of staff-hours per activity;
   - Labor utilization targets—that is, an estimate of the expected ratio of the productive and unproductive staff time; and
   - Evaluation and monitoring of utilization, expected workload, and labor requirements.

   Once actual labor requirements have been determined, managers can assess the productivity of staff and compare their utilization with that of other departments. This procedure is commonly used in U.S. hospitals.

6.3.2 Payment Methods (Internal Efficiency)

1. The Ministry of Health and the Ministry of Finance should work out a transition to a capitated financing approach to fund health care for the non-working population. Once this occurs, oblast health authorities should be given authority to develop their own systems of payment.

2. A formula for allocating equitable per capita payments across oblasts, and across geographic areas generally, should be developed and refined. The formula should take into account historical expenditure patterns as well as clinical, epidemiological, and social conditions.

3. The payment method used with hospitals should be changed. The current methods are mostly based on beds and staff and have perverse incentives that do not allow for increases in labor productivity or increases in quality of care. Some hospitals—those in the FEZ demonstration area and some in the South Kazakhstan oblast—use bed-days and the average cost per bed-day. These approaches also have significant weaknesses: hospital staff have an incentive to increase bed-days, and spending on inpatient care is difficult to predict, making the insurer vulnerable. There are two options for changing payment using the current bed-day approach:

   - Regulating compliance with some established norm of bed-days for each diagnostic group, as is currently done in the FEZ demonstration area. However, this approach cannot identify excessive bed-days within the normative standard of bed-days (e.g., easy cases within a diagnostic category), and it is costly to administer.
   - Having insurers and hospitals negotiate a planned number of bed-days so that both sides share the risk of unpredictable spending. The negotiated amount should be based on a good estimate of future admissions and costs, although high inflation may make precise estimates difficult and may require some end-of-the-year adjustments.

4. The payment method to hospitals should be changed to a per case ("performance-related") basis, which can be done in at least two ways:

   - Development of normative standards by diagnostic category, such as length of stay and costs, and use of these normative categories to attach lump-sum payments for each discharged case, determined by historical costs, negotiation, or some other method.
   - Further differentiation of the diagnostic categories, for example by age and gender, to make them more similar to the Diagnosis-Related Group (DRG) system under which one payment amount is made, regardless of length of stay. This system would have to be adjusted for very complicated cases and for cases involving multiple diagnoses.

   Both these approaches could encourage underprovision of care (e.g., premature discharge, inappropriate admissions), necessitating some parallel measures of quality assurance .

   Developing this new payment method will require fairly extensive empirical data as well as teams of knowledgeable physicians and analysts and therefore might best be done on the national level. Once developed and tested at the national level, it could be adjusted for local application.

5. Fee-for-service methods in the FEZ demonstration area should be monitored. The current method of payment to polyclinics in the FEZ demonstration area, which is based on numbers and costs of individual services, has some potential weaknesses:

   - Physicians have an incentive to increase the number of visits, even if some are unnecessary;
   - Physicians tend to prescribe excessive diagnostic and lab tests;
   - Physicians tend to divide the course of treatment into the maximum number of visits, which may be inconvenient for patients;
   - The relative level of preventive services may decrease; and
   - The administrative costs are high, with computer systems and highly skilled staff needed for processing and checking claims data.

   This fee-for-service approach may have the effect of encouraging greater autonomy, increasing access in small towns and rural areas, and helping to retain more highly qualified physicians and staff. Potential volume problems may be counterbalanced by strong administrative controls. This payment system can be more successfully used under VHI coverage because the relatively small number of payments and physicians under contract can be more effectively monitored.

   It may be useful periodically to examine the experience of this payment approach. It may also be beneficial to use the payment system currently used in polyclinics in order to select those physicians who are most efficient as well as those who are interested in following cost-containment strategies introduced by insurers.

6. Some method of capitation payment should be used for polyclinics, or, preferably, polyclinics should be restructured into primary care groups (APTKs), in order to make them fundholders for inpatient costs and specialized outpatient care (consults, diagnostic tests, etc.). This financial and managerial scheme can encourage primary care and increase the overall efficiency of resource use. In addition, APTKs/polyclinics could receive fee-for-service payments for priority services—such as family planning, routine check-ups, vaccinations, etc.—to encourage cost-effectiveness.

7. The APTK/fundholder approach should be strengthened with counterincentives and monitoring to protect against possible underprovision of care, through:

   - APTK payments for services related to neglect or postponement of care;
   - Consumer choice to see a medical doctor in a hospital without referral from the primary care group;
   - Quality assurance standards on appropriateness of inpatient admissions by diagnostic category;
   - Routine monitoring of additional indicators such as referral rates, prescriptions for support services, and drugs per curative visit.

8. Structured, standardized cost accounting and clinical information systems should be developed for use by both hospital administrators and insurers. A basic, functional cost accounting system for use within the hospital's management and information system should be considered. This would allow the use of OECD-type "step-down" accounting methods for hospital costs to promote financial accountability of departmental managers. This also could encourage both analysis of hospital costs and management improvements.

   Currently, in both the FEZ and the South Kazakhstan oblast demonstration areas, a vast amount of clinical and financial data are recorded, but little use is made of them. Each of the hospitals visited in Chimkent City, for example, had developed data collection systems, were in various stages of developing data bases, and had capable programmers to develop customized programs. However, their approach to information systems development has been very generalized: they tend to collect too much information, which leads to a sub-optimal use of computing resources and makes their systems more complicated than necessary.

6.4 QUALITY AND EQUITY OF ACCESS

1. A new set-aside fund should be established in the FEZ demonstration area to ensure a base for public health activities. This fund also could serve as a reserve for special activities such as preventive and community care, emergencies, care of school children, etc. Currently, funding for public health comes from the general MHI fund; such a separate set-aside fund should be administered by the TMO rather than the MHI organization.

2. Quality Assurance (QA) activities should be maintained at the *facility* level in both the FEZ demonstration area and in the South Kazakhstan oblast area.

3. QA functions should be restructured at the *insurance* level in South Kazakhstan oblast, in at least three ways:

- Each insurance intermediary should review some sample of claims for appropriateness and necessity of services and for fraud and duplication of services;
- A more comprehensive QA component should be housed in a separate legal entity that would contract with the MHI fund and VHI intermediaries as well as with facilities. The MHI fund and the VHI intermediaries, in turn, would only reimburse contracted/approved facilities. This separation of functions would increase the independence and flexibility of quality review activities.
- QA methods should encompass outcomes-based surveillance across facilities and areas. Patient record reviews may become very cumbersome and expensive in a large geographic area. Excellent computer and information systems are already in place for some shifting to this approach.

As the FEZ area demonstration is extended to the oblast level, a similar restructuring for QA should occur there.

4. The accreditation of providers and the licensing of insurers should be carried out by one or more legally independent entities, which would increase the independence of reviewers and improve their flexibility in developing and using standards. The independent entities should be state- or oblast-sanctioned and, in order to maintain their self-sufficiency and to minimize their dependence on the public budget, they should charge fees for their reviews.

6.5 OTHER

1. Provider autonomy and/or privatization should be encouraged. An improved legal framework is necessary to help facilities and providers become more autonomous. Facilities should have the option of becoming either nonprofit or for-profit entities. Some elements of this framework could include:
   - Steps that would permit an initial phase-in period;
   - Flexibility to implement certain policies immediately (e.g., the ability to hire and fire physicians);
   - Delineation of tax responsibilities under various legal categories;
   - Limited financial protection during the phase-in period to allow adjustment to new payment incentives; and
   - Rules and flexibility regarding private- versus public-pay patients.

2. The current training infrastructure should be built upon. The Chimkent Oblast Training Center for New Business and Technology should be considered as a central training center for all Central Asian republics in the areas of health insurance, marketing, claims processing, business management, and actuarial and estimation techniques. A visiting professor program should be established to bring in Western-based experts on a variety of health reform-related disciplines. In addition, the Center could be an applicant for a new grant under the NIS/Abt Grants program to establish such a visiting professorship program or to initiate another special program.

BIBLIOGRAPHY

Aday, L., and R. Anderson, R. 1974. "A Framework for the Study of Access to Medical Care," *Health Services Research* 9:3 (Fall), 208-220.

Center for Health Information. 1992. "Kazakhstan: USAID Health Profile." Washington, DC: U.S. Agency for International Development (April 24).

Denisov I., A. Telyukov, and I. Sheiman. 1990. "Soviet Health Care: Time of Economic Reforms and Decision-Making," USSR Health Symposium, Johns Hopkins University, Baltimore, MD (September).

Donabedian, A. 1980. *Explorations in Quality Assessment and Monitoring, Volume I, The Definition of Quality and Approaches to Its Assessment.* Ann Arbor, MI: Health Administration Press, Ann Arbor.

———. 1982. *Explorations in Quality Assessment and Monitoring, Volume II, The Criteria and Standards of Quality.* Ann Arbort, MI: Health Administration Press.

Kazakhstan Ministry of Health. 1994. *Kazakhstan: Analysis of the Health Sector and Strategy of Assistance for the Know How Fund.* Overseas Development Administration. (February).

Kutzin, Joseph. 1993. "Hospital Economics and Financing: Proposed Program of Work." Prepared for the World Health Organization, Washington, DC (December 17).

Lauridsen, Ernst. 1992. "Kazakhstan: Health Sector Assessment." Prepared for the World Bank, Washington, DC (May 1).

Makinen, Marty. 1992. "HFS Trip Report: Kazakhstan," Bethesda, MD: Health Financing and Sustainability Project, Abt Associates Inc. (December).

Organization for Economic Cooperation and Development. 1993. *Health Systems and Comparative Statistics: Facts and Trends, Volumes I and II.* Paris: OECD.

Pettingill, J., and J. Vertrees. 1982. "Reliability and Validity in Hospital Case-Mix Measurement," *Health Care Financing Review* 4:2 (December), 101-128.

Rowland D., and A. Telyukov. 1991. "Health Care in the USSR from an American and Soviet Perspective," *Health Affairs.*

Sandier, S. 1989. "Health Services Utilization and Physician Income Trends," *Health Care Financing Review,* Annual Supplement (December).

Schieber, G., and J. Langenbrunner. 1991. "Obstacles to Soviet Health Reform," *Health Affairs* (Winter), 312-14.

Schieber, G., R. Anthony, P. Berman, C. Cleland, and J. Rice. 1992. *Health Care Financing in Russia.* Report of USAID mission to Russia, October 1992. Washington, DC: USAID (November 24).

Schieber, G. 1993. "Health Care Financing Reform in Russia and Ukraine," *Health Affairs,* Supplement Issue.

Sheiman, I. 1990. "Economic Reforms in the Health Sector of the USSR." USSR Health Symposium, Johns Hopkins University, Baltimore, MD.

———. 1992. "State Tax-Financed or Health Insurance Model: A Difficult Choice to be Made in Russia," *Discussion Paper 102.* York, United Kingdom: York University (March).

———. 1993. "New Methods of Finance and Managment of Health Care in the Russian Federation." Paper presented to the Health Sector Reform in Developing Countries Conference, Durham, NH (September).

Telyukov, A. 1991. "A Concept of Health Financing Reform in the Soviet Union," *International Journal of Health Services* 3, 493-504.

White House Task Force on Health Risk Pooling. 1993. *Health Risk Pooling for Small Group Health Insurance.* Washington, DC: USGPO (January).

World Bank. 1993. *Kazakhstan: The Transition to a Market Economy.* Washington, DC: World Bank.

APPENDICES

APPENDIX A

APPENDIX A
HEALTH FINANCING SIMULATION MODEL

In the absence of accurate and comprehensive historical information on both financial and economic indicators and rapid changes in organizational structure and operations of the health care delivery system, it is difficult to predict future outcome with reasonable accuracy. Changes in the organizational and operational structure that are being contemplated will have major implications for the cost of health care. Likewise, rapid and profound changes in political and macroeconomic condition will have major implications for the economy's ability to finance health care.

The computer-generated simulation model estimates broad financial aggregates resulting from hypothetical changes in efficiency and sources of revenue to analyze the ability of the economy to raise sufficient financing. The analysis will allow the planners to assess the consequences of various financing and management options and also to set reasonable targets for raising revenue and improve efficiency.

The model uses a spreadsheet software (Lotus 1-2-3) and data from numerous sources to replicates flows and uses of funds in the current system for delivering and financing health care. It records current sources of revenue for health care and reconstructs the employment and payroll base in the economy, classifying business according to size of employment, rural/urban, and budget and non-budget organizations for Karajal and Zhairem in the Free Economoc Zone of Dzeskasgan oblast and Chimkent and three rural rayons in the South Kazakhstan oblast. It incorporates information on expenditure by cost item and by type of facility and volume of services provided in different care settings.

The simulation model uses three worksheets to input data. The input data are used in formulas physically located in the cells within the three worksheets to produce a series of estimations, which are in turn used to compute the final results produced in the output tables located in other cells of the model. For example, expenditure data and utilization data are used to compute unit cost of inpatient, day-care, and outpatient services; proportion of expenditures attributed to various settings of care or types of inputs; proportion of revenue coming from various sources, etc. These estimates are processed with indicators of expected changes in macroeconomic indicators, such as inflation or tax rates, which are postulated in the scenario table to determine expected levels of cost, revenue, and other financial indicators.

The following sections describe the variables in the input spreadsheets, scenario table, and output tables and their relative positions in the framework of the electronic spreadsheet.

INPUT VARIABLES

Cost/Expenditure Data

Expenditure data is organized within the cell coordinates of A1 to J53. Key data inputs in this category and their location in the spreadsheet are described below. The actual data on expenditure incorporated in the model are shown in *Table A-1*.

- Total expenditure by "Chapters" (line item categories) for all hospitals and polyclinics in Karajal for the period 1990 to 1993 are entered in cells A1 to J15.

- Total expenditure by Chapters for all hospitals and polyclinics in all of Free Economic Zone (FEZ) for the period 1990 to 1993 are entered in cells A17 to J31.
- Total expenditure by cost centers for Karajal for the period 1990 to 1993 are organized in cells A33 to J42.
- Total expenditure by cost centers for all of FEZ for the period 1990 to 1993 are compiled in cells A44 to J53.

Revenue Data

The model analyzes two aspects of revenue sources: sources that contributed to health care in the past, some of which will continue to do so under the Mandatory Health Insurance (MHI) scheme; and the payroll base of the region that is taxed (will be taxed in the case of South Kazakhstan) to support the MHI fund. (Data on revenue sources is arranged in cell addresses AD301 to AL394 in the Lotus spreadsheet.) Key data inputs in this category and their location in the spreadsheet are described below. The actual data on expenditure incorporated in the model are shown in *Table A-2.*

- Data on monthly revenue by sources for 1993 for Karajal are entered in cells AD301 to AD316.
- Data on monthly revenue by sources for 1993 for all of FEZ are entered in cells AD318 to AD333.
- Data on payroll and employment size of major enterprises participating in MHI, payroll tax obligation (5 percent), and actual amount contributed in 1993 are entered in cells AD339 to AL394.

Utilization Data

Data on volume of health care services provided by the system is shown in *Table A-3.* These are arranged in inpatient, day-care and outpatient categories. Utilization data are entered in the cell address of O59 to C239 in the Lotus spreadsheet. Key variables in this category and their location in the spreadsheet are described below:

- Data on admissions, bed-days, and ALOS by nosological groups for regular inpatient for hospitals in Karajal are entered in cells O61 to W83.
- Data on admissions, bed-days, and ALOS by nosological groups for day-care patients for hospitals in Karajal are entered in cells O85 to W106.
- Data on admissions, bed-days, and ALOS by nosological groups for regular inpatient for hospitals in Zhairem are entered in cells O131 to W152.
- Data on admissions, bed-days, and ALOS by nosological groups for day-care patients for hospitals in Zhairem are entered in cells O154 to W175.
- Data on outpatient visits to polyclinics by specialty areas in Karajal and Zhairem are entered in cells O265 to W284.

SCENARIO VARIABLES

Data from input spreadsheets are tied in with a number of assumptions concerning changes in macroeconomic and firm-level indicators and changes in the management and organization of the health care system. These assumptions are postulated in the scenario or assumption template to estimate cost, revenue, and other indicators in several output tables and charts. *Table A-4* lists the variables in the assumption template and specifies their positions in the electronic spreadsheet. The second column of the table is computed from the data already entered in the model. The third column accepts values for the expected changes in the variables indicated in the first column so that the impact can be measured. An analyst can enter any single value or combination of values in the third column. A copy of the scenario template with examples of some assumption values used to estimate cost and revenue in the health sector is provided in *Table A-5.*

OUTPUT VARIABLES

A series of output tables on revenue, aggregate cost by types of care, average cost by services, and unit cost by specialty groups are produced by the model. *Table A.6* is a sample of cost and revenue forecast tables produced under a hypothetical scenario. The output tables are available in cells AL470 to AS697 of the model spreadsheet. The values shown in the second and third columns of output *Table A.6* are estimated from data collected from various sources which were entered into the model. They indicate the current (1993) status of sources and uses of funds in the health care system in the region. The fourth and fifth column show the new estimates of the same variables when for first two sets of assumptions (on revenue and cost) indicated on the scenario template *Table A.4.* The final column results from changes in the third set of assumptions (efficiency) in the scenario template. The difference between the columns represents the effect of changes in the various economic indicators, financing policy and management, and organizational changes in health care postulated in the scenario template.

The model estimates unit cost for various categories of care. Output tables for unit costs could be located in cells AL583 to AS697 in the electronic spreadsheet. The average cost of services by type of care is computed simply by dividing total cost of services for a particular type of service into the number of services provided under that category. The unit cost of services by inpatient specialty area is also calculated by the model. Examples of unit costs computed by the model are shown in *Table A.7.* The average cost by specialty in our example varies only by ALOS because data on case severity were not available. However, if such data were available, normalized values of severity could be entered into the column titled "complicacy factor" (shown in *Table A.7)* to estimate case-adjusted unit cost of services by specialty group. Complicacy factor was applied equally for all cases in these estimates.

OPERATION OF THE MODEL

The model allows forecasting of health care revenues and costs according to presumed changes in the determinants listed below, independently or in any combination.

Revenue Aspects

1. Effect of changes in the *level of revenue contribution from current sources* on total revenue and the ability to meet health care obligations.

2. Effect of changes in the *rate of payroll tax* for health insurance on total revenue and the ability to meet health care obligations.

3. Effect of *copayments or user fees* on total revenue and the ability to meet health care obligations.

4. Effect of changes in the *volume of payroll* in the economy on the size of contribution to health insurance and total revenue and the ability to meet health care obligations.

5. Effect of changes in *compliance rates* on the size of contribution to health insurance and total revenue and the ability to meet health care obligations.

Cost Aspects

1. Effect of changes in *general price level* on the cost of and/or expenditures on health care.

2. Effect of changes in *salary level of health care workers* on the cost of health care.

3. Effect of changes in *health care administrative costs* on health care finance.

4. Effect of changes in *cost of pharmaceuticals and medical supplies* on the cost of health care.

5. Effect of changes in *capital and other fixed costs* on health care finance.

Efficiency Aspects

1. Effect of changes in *inpatient referral rates* on the cost of health care.

2. Effect of changes in *inpatient average length of stay (ALOS)* on the cost of health care.

3. Effect of changes in *day-care ALOS* on the cost of health care.

To reconstruct a scenario, the entries in the scenario template need to be adjusted. The cursor will move to the cell AQ439 when the Lotus spreadsheet is retrieved on the computer, showing the scenario worksheet. The analyst can move the cursor up or down the column and can change the values of any of the variables shown in rows 439 and 460 in that column (column AQ). The analyst should not make entries in any of the other cells because that may alter important formulas in those cell, making the model inoperable.

Once the assumptions are entered, the model will automatically compute the new estimates, which will show up in the output tables. Move the cursor down to the appropriate output tables by hitting the direction keys or the "page down" key. Entries in the scenario template can be changed any number of times. To change input data, move to the cells of the appropriate variables and enter the new values. Only cells that have hard numbers (data that has been entered physically) should be changed. **It is crucial that the cells containing formulas are not altered.**

The analyst can move around the spreadsheet. However, to locate a particular area of the spreadsheet, refer to the cell address given in this text. This can be done by hitting F5, typing A50 and then pressing "enter." To move to another address simply hit F5, type in the cell address, and then press "enter."

Table A.1

Cost by Item–Hosp & Poly (Karajal)

	1990 Cost	P.C. of Total	1991 Cost	P.C. of Total	1992 Cost	P.C. of Total	1993 Cost	P.C. of Total
Salary	1,600	53.87%	3,900	55.24%	18,140	43.44%	253,400	40.84%
State Insurance	100	3.37%	1,020	14.45%	6,700	16.04%	93,700	15.10%
Management Cost	300	10.10%	500	7.08%	4,400	10.54%	156,400	25.21%
Business Trips	20	0.67%	40	0.57%	300	0.72%	2,000	0.32%
Food	300	10.10%	700	9.92%	4,800	11.49%	79,300	12.78%
Pharmaceutical	300	10.10%	400	5.67%	1,970	4.72%	20,700	3.34%
Equipment	100	3.37%	100	1.42%	1,300	3.11%	2,500	0.40%
Sheets & Linen	100	3.37%	200	2.83%	1,100	2.63%	500	0.08%
Maintenance & Construction	100	3.37%	100	1.42%	2,300	5.51%	400	0.06%
Other	50	1.68%	100	1.42%	750	1.80%	11,600	1.87%
Total	2,970	100%	7,060	100%	41,760	100%	620,500	100%

Cost by Item–Hosp & Poly (FEZ)

	1990 Cost	P.C. of Total	1991 Cost	P.C. of Total	1992 Cost	P.C. of Total	1993 Cost	P.C. of Total
Salary	1,600	53.87%	3,900	55.24%	18,140	43.44%	419,500	43.12%
State Insurance	100	3.37%	1,020	14.45%	6,700	16.04%	156,700	16.11%
Management Cost	300	10.10%	500	7.08%	4,400	10.54%	187,900	19.31%
Business Trips	20	0.67%	40	0.57%	300	0.72%	2,500	0.26%
Food	300	10.10%	700	9.92%	4,800	11.49%	134,500	13.82%
Pharmaceutical	300	10.10%	400	5.67%	1,970	4.72%	29,300	3.01%
Equipment	100	3.37%	100	1.42%	1,300	3.11%	3,600	0.37%
Sheets & Linen	100	3.37%	200	2.83%	1,100	2.63%	1,600	0.16%
Maintenance & Construction	100	3.37%	100	1.42%	2,300	5.51%	22,700	2.33%
Other	50	1.68%	100	1.42%	750	1.80%	14,600	1.50%
Total	2,970	100%	7,060	100%	41,760	100%	972,900	100%

Cost by Centers (Karazal only)

	1990 Cost	P.C. of Total	1991 Cost	P.C. of Total	1992 Cost	P.C. of Total	1993 Cost	P.C. of Total
Polyclinics and Ambulance		0.00%	3,000	56.50%	18,400	51.48%	312,700	50.39%
Hospital		0.00%	1,800	33.90%	12,300	34.42%	238,398	38.42%
Pharmaceutical	320	76.19%	390	7.34%	1,970	5.51%	32,724	5.27%
Capital/Construction	50	11.90%	60	1.13%	2,320	6.49%	18,338	2.96%
Others	50	11.90%	60	1.13%	750	2.10%	18,338	2.96%
Total	420	100%	5,310	100%	35,740	100%	620,500	100%

100

Cost by Centers (Total FEZ)

	1990 Cost	P.C. of Total	1991 Cost	P.C. of Total	1992 Cost	P.C. of Total	1993 Cost	P.C. of Total
Polyclinics and Ambulance		0.00%	3,000	56.50%	34,500	68.52%	530,166	54.49%
Hospital		0.00%	1,800	33.90%	9,700	19.27%	442,734	45.51%
Pharmaceutical*	320	76.19%	390	7.34%	2,770	5.50%		0.00%
Capital/Construction	50	11.90%	60	1.13%	2,330	4.63%		0.00%
Others	50	11.90%	60	1.13%	1,050	2.09%		0.00%
Total	420	100%	5,310	100%	50,350	100%	972,900	100%

Table A.2

Revenues from Sources in Karazal – 1993 (Tenge)

	Capital Fund	Budget	Ins.Fund	Sponsor	Voluntary	Others	Total
February	3,800	0	0	0	0	0	3,800
March	200	0	327	0	0	0	527
April	400	21,200	10,267	0	0	0	31,867
May	0	23,400	1,236	0	0	1,000	25,636
June	600	5,665	22,665	1,360	0	0	30,290
July	0	23,600	1,598	8,640	0	0	33,838
August	0	43,266	31,085	3,600	81	0	78,032
Sept	0	162,800	30,348	0	329	0	193,477
Oct	0	30,000	10,479	0	529	0	41,009
Nov	0	40,000	3,731	0	749	0	44,480
Dec	200	377,900	1,397	0	204	0	379,701
Total	5,200	727,831	113,133	13,600	1,892	1,000	862,656

Revenues from Sources in Zhairem – 1993 (Tenge)

	Capital Fund	Budget	Ins.Fund	Sponsor	Voluntary	Others	Total
February		0	0	0	0	0	0
March		0	0	0	0	0	0
April		14,000	8,919	0	0	0	22,919
May		4,000	2,842	0	0	0	6,842
June		6,000	269	0	0	0	6,269
July		30,000	5,484	0	0	0	35,484
August		6,000	997	0	0	0	6,997
Sept		6,000	0	0	0	0	6,000
Oct		20,000	0	0	0	0	20,000
Nov		0	0	0	0	0	0
Dec		0	0	0	0	0	0
Total	0	86,000	18,511	0	0	0	104,511
Total (Zhairem+Karajal)	5,200	813,831	131,644	13,600	1,892	1,000	967,167

Table A.2

Contribution to Health Insurance
by Major Enterprises in the Karajal and Zhairem Area

	Firm Name	Total Payroll	Number Employees	Average Payroll	Insurance Obligation	Actual Amt Collected	Amount Owed	Percent Realized
Zhairem								
	Zhairem Mining	4,910,000	2,593	1,894	245,500	223,575	21,925	91.07%
	Zhairem Bldg Co.	1,733,800	860	2,016	86,690	84,380	2,310	97.34%
	Bakery	108,200	54	2,004	5,410	762	4,648	14.09%
	Repair Services	14,416	27	534	721		721	0.00%
	Transport		NA		0	133		
	Power	140,231			7,012		7,012	0.00%
	Geologist	558,596	388	1,440	27,930	1,410	26,520	5.05%
	Cerasu		NA					
	Aluyet	93,788	30	3,126	4,689	312	4,377	6.66%
	Kuralis	66,616			3,331		3,331	0.00%
	Nergokus	60,332	24	2,514	3,017	440	2,577	14.59%
	Alou	124,800			6,240		6,240	0.00%
	Shalpark		NA			82		
	Merei							
	Bikunur							
	Zhairem Constr	1,907,000	974	1,958	95,350		95,350	0.00%
Total (Zhairem)		9,717,779	4,950	1,963	485,889	311,095	175,009	64.03%
Karajal								
	Bakery	66,520	41	1,622	3,326	3,021	305	90.84%
	Topography		NA			132		ERR
	Constr Co.	8,191	14	585	410	108	302	26.37%
	Transport Co.	174,595	133	1,313	8,730	3,815	4,915	43.70%
	Food Co.	178,500	188	949	8,925	8,377	548	93.86%
	Public Transport Co.		NA					ERR
	Communication D	44,547	43	1,036	2,227	903	1,325	40.52%
	Road Constr		NA			3,246		ERR
	Firm 9	47,100	61	772	2,355	1,583	772	67.23%
	Firm 10	92,084	55	1,674	4,604	4,084	520	88.71%
	Firm 11	13,200	19	695	660	506	154	76.69%
	Firm 12		170	0	0		0	ERR
	Firm 13	27,440	28	980	1,372		1,372	0.00%
	Mining Constr	1,217,000	338	3,601	60,850	43,377	17,473	71.28%
	Karajal Mining	5,668,000	2,427	2,335	283,400	395,746	(112,346)	139.64%
	Firm 16	109,190	66	1,654	5,460	5,786	(327)	105.98%
	Firm 17	1,200	4	300	60		60	0.00%
	Firm 18	12,133	6	2,022	607	625	(18)	102.98%
	Firm 19	3,571	10	357	179	152	27	85.03%
	Teacher	102,700	841	122	5,135		5,135	0.00%
	Power Co.	478,100	165	2,898	23,905		23,905	0.00%
	Merei Food Co.	124,800	181	690	6,240		6,240	0.00%
	Others							
Total (Karajal)		8,368,871	4,790	1,747	418,444	471,460	(49,639)	112.67%
Payment in Kind (power, gas, water, etc)		1,485,600	800	1,857	74,280	74,280	0	100.00%
Total Zhairem+Karajal		19,572,250	10,540	1,857	978,613	856,835	125,370	87.56%

Table A.3

Hospital & Polyclinic Utilization and Medical Statistics

Karajal Hospital (Regular Inpatient Cases)

	1992			1993		
	Admissions	Beddays	ALOS	Admissions	Beddays	ALOS
Infection & Parasitic	491	15,368	31	387	11,687	30
Cancer & Neoplastic	20	306	15	34	537	16
Endocrinopathy	19	334	18	11	161	15
Blood & Homogenic	23	306	13	22	286	13
Psychiatry	57	473	8	50	605	12
Nervous & Sensority	103	1,195	12	52	598	12
Blood Circulation	329	4,836	15	189	2,608	14
Respiratory	1,032	10,423	10	876	13,666	16
Digestion	313	3,380	11	223	2,788	13
Urological	321	4,301	13	265	3,975	15
Pregnancy	831	5,817	7	822	5,836	7
Cuts & Hypodermic/Tissue	74	999	14	99	1,564	16
Muscular	177	2,036	12	105	1,124	11
Inherency Anomolies	14	164	12	12	133	11
Peri-natal	10	59	6	8	48	6
Symptoms & non-indicative	6	37	6	6	58	10
Traumatic	387	4,954	13	370	4,292	12
Total	4,207	54,988	13	3,531	49,966	14

Karajal Hospital (day care cases)

	1992			1993		
	Admissions	Beddays	ALOS	Admissions	Beddays	ALOS
Infection & Parasitic	251	4,142	17	210	3,402	16
Cancer & Neoplastic	8	120	15		0	
Endocrinopathy	2	36	18	2	39	19
Blood & Homogenic	3	46	15		0	
Psychiatry						
Nervous & Sensority	59	602	10	34	381	11
Blood Circulation	78	1,209	16	71	902	13
Respiratory	193	2,258	12	139	1,988	14
Digestion	162	1,733	11	117	1,275	11
Urological	141	1,889	13	119	1,654	14
Pregnancy	103	721	7	84	588	7
Cuts & Hypodermic/Tissue	95	1,321	14	72	1,080	15
Muscular	248	2,530	10	131	1,310	10
Inherency Anomolies						
Peri-natal						
Symptoms & non-indicative						
Traumatic	64	742	12	51	566	11
Total	1,407	17,349	12	1,030	13,185	13

Table A.3

Zhairem (regular inpatient cases)

	1992 Admissions	Beddays	ALOS	1993 Admissions	Beddays	ALOS
Infection & Parasitic	249	6,623	27	148	3,389	23
Cancer & Neoplastic	8	169	21	6	92	15
Endocrinopathy	20	398	20	10	146	15
Blood & Homogenic	32	563	18	7	125	18
Psychiatry	4	35	9	27	408	15
Nervous & Sensority	65	962	15	102	1,816	18
Blood Circulation	127	2,870	23	95	1,397	15
Respiratory	901	11,353	13	813	12,114	15
Digestion	178	3,311	19	98	1,617	17
Urological	265	3,180	12	182	2,057	11
Pregnancy	678	4,814	7	857	6,170	7
Cuts & Hypodermic/Tissue	219	3,263	15	126	1,348	11
Muscular	262	2,594	10	164	1,870	11
Inherency Anomolies	2	20	10		0	
Peri-natal	23	122	5	13	70	5
Symptoms & non-indicative		0		8	90	11
Traumatic	358	5,764	16	294	3,116	11
Total	3,391	46,040	14	2,950	35,825	12

Zhairem (day care cases)

	1992 Admissions	Beddays	ALOS	1993 Admissions	Beddays	ALOS
Infection & Parasitic	0	0		0	0	
Cancer & Neoplastic	0	0			0	
Endocrinopathy		0		3	44	15
Blood & Homogenic		0			0	
Psychiatry		0			0	
Nervous & Sensority	43	662	15	63	977	16
Blood Circulation	51	923	18	56	1,210	22
Respiratory	68	925	14	73	1,226	17
Digestion	53	981	19	63	832	13
Urological	15	180	12	74	969	13
Pregnancy		0			0	
Cuts & Hypodermic/Tissue		0			0	
Muscular	20	212	11	35	431	12
Inherency Anomolies		0			0	
Peri-natal		0			0	
Symptoms & non-indicative		0			0	
Traumatic		0			0	
Total	250	3,883	16	367	5,688	15

Table A.3

Aggregate Statistics:

Regular Inpatient	1990 Admissions	Beddays	ALOS	1991 Admissions	Beddays	ALOS	1992 Admissions	Beddays	ALOS	1993 Admissions	Beddays	ALOS
Karajal							4,207	54,988	13.07	3,531	49,966	14.15
Zhairem							3,391	46,040	13.58	2,950	35,825	12.14
Total	6,215	118,001	18.99	6,287	137,018	21.79	7,598	101,028	13.30	6,481	85,790	13.24
Day Care												
Karajal	0	0	0.00	0	0	0.00	1,407	17,349	12.33	1,030	13,185	12.80
Zhairem	0	0	0.00	0	0	0.00	250	3,883	15.53	367	5,688	15.50
Total	0	0	0.00	0	0	0.00	1,657	21,231	12.81	1,397	18,872	13.51
Total	6,215	118,001	18.99	6,287	137,018	21.79	9,255	122,260	13.21	7,878	104,663	13.29
Polyclinic visits	165,128			162,558			191,672			189,177		
Preventive cases	30,926			24,801			32,242			25,175		
Diagnostics tests	417,000			544,544			438,244			619,474		

Polyclinic Visits

	1990	1991	1992	1993
GP	31,522	27,624	48,572	42,534
Surgeon	19,465	15,623	21,764	23,259
Obstetrics	9,438	7,909	12,984	11,688
Pedetrician	20,532	24,580	33,102	43,406
Citus & Veneral Disease Specialist	14,363	13,141	16,630	14,117
Teeneger Specialist	5,307	2,073	3,032	4,990
Tumor Specialist	197	85	197	435
Harcology Specialist	4,891	3,548	3,359	3,854
Psychiatrist	4,281	3,584	3,589	4,889
Physiologist	6,416	4,259	5,300	5,845
Endoctrinilogist	13,168	11,119	9,125	8,744
Cardiologist	0	191	191	0
Neuropathalogist	10,759	10,106	4,599	0
Urologist	0	103	0	0
Contagienist	710	526	0	0
Dentist	24,079	38,087	29,228	25,416
Total	165,128	162,558	191,672	189,177

Preventive Services

	1990	1991	1992	1993
Vaccination	20,215	18,300	19,997	15,015
Preventive Maintenance	9,294	4,844	10,853	9,125
Contraception Services	1,417	1,657	1,392	1,035
Total	30,926	24,801	32,242	25,175

TABLE A.4
LIST OF VARIABLES IN THE SCENARIO TEMPLATE

	1993 Data (Cell Address)	Assumed Changes (Cell Address)
Revenue: (Column AL433..AL439)		
Capital contribution	AP439	AQ439
Budget contribution	AP440	AQ440
Payroll tax rate	AP442	AQ442
Other contribution	AP443	AQ443
Copayment/User fee	AP444	AQ444
Payroll volume	AP445	AQ445
Compliance rate	AP446	AQ446
Cost: (Column AL442..AL446)		
General price level	AP449	AQ449
Salary in health care	AP450	AQ450
Administrative cost	AP451	AQ451
Pharmaceutical cost	AP452	AQ452
Cost of capital	AP453	AQ453
Efficiency: (Col AL449..AL452)		
Inpatient referral rate	AP457	AQ457
Inpatient ALOS	AP459	AQ459
Day-care ALOS	AP460	AQ460

Table A.5

KAZAKHSTAN (FEZ)

Scenario Worksheet

Scenario 1: Case 1 (10 % drop in IP cases; 10% drop in ALOS; 50% inflation; 57% insurance compliance)

First Level of Changes:	Current	Expected	Amount
Revenue Assumptions:	**Rate/Amt**	**Changes (%)**	**(Tenge)**
Change in capital contribution	5,200	0.00%	5,200
Change in Budget Contribution	813,831	0.00%	813,831
Change in Insurance Rate			
for Health (percent of payroll)	5.00%	5.00%	
Change in other contributions (amnt/prcnt)	16,492	0.00%	16,492
Introduction of co-payment (Percent of cost)	0.00%	0.00%	0
Change in Payroll Volume (percent)	19,572,250	0.00%	19,572,250
Change in Collection Effectiveness	13.45%	326.00%	57.31%
Cost Assumptions:			
General changes in cost, other than those below		50.00%	
Percent change in Salary		50.00%	
Percent change in administrative cost		50.00%	
Percent change in pharmaceutical cost		50.00%	
Percent change in capital cost		50.00%	
Second Levels of Changes:			
Relative change in cost (structural Efficiency)			(New ratio)
Change in inpatient/outpatient ratio	4.16%	-10.00%	3.75%
Reduction in ALOS			
Regular inpatient	13.24	0.00%	
Day-care	13.51	0.00%	

Table A.6

Scenario 1: Case 1 (10 % drop in IP cases; 50% inflation; 57% insurance compliance)
Funding Sources and Amount

Sources	1993 Contribution Amount	1993 Contribution P.C. of Total	Expected Contribution Amount	Expected Contribution P.C. of Total
Capital Budget	5,200	0.54%	5,200	0.37%
Government Health Budget	813,831	84.15%	813,831	58.28%
Insurance Premium	131,644	13.61%	560,802	40.16%
Sponsor	13,600	1.41%	13,600	0.97%
Voluntary Contribution	1,892	0.20%	1,892	0.14%
Patient Contribution	0	0.00%	0	0.00%
Others	1,000	0.10%	1,000	0.07%
Total	967,167	100.00%	1,396,325	100.00%

Cost by Items (Total FPZ)

Items	1993 Cost	1993 P.C. of Total	Expected Cost After First Iteration Cost	Expected Cost After First Iteration P.C. of Total	Expected Cost After Efficiency
Salary	419,500	43.12%	629,250	43.12%	602,043
State Insurance	156,700	16.11%	235,050	16.11%	224,887
Management Cost	187,900	19.31%	281,850	19.31%	269,664
Business Trips	2,500	0.26%	3,750	0.26%	3,588
Food	134,500	13.82%	201,750	13.82%	193,027
Pharmaceutical	29,300	3.01%	43,950	3.01%	42,050
Capital/Equipment	3,600	0.37%	5,400	0.37%	5,167
Sheets & Linen	1,600	0.16%	2,400	0.16%	2,296
Maintenance & Repair	22,700	2.33%	34,050	2.33%	32,578
Other	14,600	1.50%	21,900	1.50%	20,953
Total	972,900	100%	1,459,350	100%	1,396,252

Cost by Centers

Centers	1993 Cost	1993 P.C. of Total	Expected Cost After 1st Iteration	Expected Cost After Efficiency Cost	Expected Cost After Efficiency P.C. of Total
Hospitals					
Regular Inpatient	381,120	39.17%	571,680	514,512	36.85%
Daycare	61,614	6.33%	92,421	83,179	5.96%
Polyclinics	530,166	54.49%	795,249	798,561	57.19%
Preventive Services		0.00%			0.00%
Total	972,900	100%	1,459,350	1,396,252	100%

Unit Cost of Services

	1993 Cost	ALOS	Expected Cost After 1st Iteration	Expected Cost After Efficiency Cost	ALOS
Cost per Inpatient Admission	58.81	13.24	88.21	88.21	13.24
Cost per Day–Care Admission	44.10	13.51	66.16	66.16	13.51
Cost per Outpatient Visit	2.80		4.20	4.20	

Table A.7

Combined Karajal & Zhairem (regular inpatient) 1993 Figures

	Admissions	Bed-days	ALOS	Complicacy Factor	Cost per Admission	Total Cost
Infection & Parasitic	535	15,077	28.18	1	125	66,977
Cancer & Neoplastic	40	630	15.74	1	70	2,797
Endocrinopathy	21	307	14.60	1	65	1,362
Blood & Homogenic	29	411	14.16	1	63	1,824
Psychiatry	77	1,013	13.15	1	58	4,499
Nervous & Sensority	154	2,414	15.67	1	70	10,722
Blood Circulation	284	4,005	14.10	1	63	17,791
Respiratory	1,689	25,779	15.26	1	68	114,524
Digestion	321	4,405	13.72	1	61	19,567
Urological	447	6,032	13.49	1	60	26,795
Pregnancy	1,679	12,007	7.15	1	32	53,339
Cuts & Hypodermic/Tissue	225	2,912	12.94	1	58	12,938
Muscular	269	2,993	11.13	1	49	13,297
Inherency Anomolies	12	133	11.10	1	49	592
Peri-natal	21	118	5.63	1	25	525
Symptoms & non-indicative	14	149	10.61	1	47	660
Traumatic	664	7,408	11.16	1	50	32,912
Total	6,481	85,790	13.24	1	59	381,120

Combined Karajal & Zhairem (regular inpatient) after efficiency changes

	Admissions	Bed-days	ALOS	Complicacy Factor	Cost per Admission	Total Cost
Infection & Parasitic	482	13,569	28.18	1	188	90,419
Cancer & Neoplastic	36	567	15.74	1	105	3,776
Endocrinopathy	19	276	14.60	1	97	1,839
Blood & Homogenic	26	370	14.16	1	94	2,463
Psychiatry	69	911	13.15	1	88	6,073
Nervous & Sensority	139	2,172	15.67	1	104	14,475
Blood Circulation	256	3,604	14.10	1	94	24,017
Respiratory	1,520	23,201	15.26	1	102	154,607
Digestion	289	3,964	13.72	1	91	26,415
Urological	402	5,428	13.49	1	90	36,173
Pregnancy	1,511	10,806	7.15	1	48	72,007
Cuts & Hypodermic/Tissue	203	2,621	12.94	1	86	17,467
Muscular	242	2,694	11.13	1	74	17,951
Inherency Anomolies	11	120	11.10	1	74	799
Peri-natal	19	106	5.63	1	38	709
Symptoms & non-indicative	13	134	10.61	1	71	891
Traumatic	598	6,668	11.16	1	74	44,431
Total	5,833	77,211	13.24	1	88	514,512

Table A.7

Combined Karajal & Zhairem (day care) 1993 Experience

	Admissions	Bed–days	ALOS	Complicacy Factor	Cost per Admission	Total Cost
Infection & Parasitic	210	3,402	16.20	1	53	11,107
Cancer & Neoplastic	0	0		1	0	0
Endocrinopathy	5	83	16.52	1	54	270
Blood & Homogenic	0	0		1	0	0
Psychiatry	0	0		1	0	0
Nervous & Sensority	97	1,357	13.99	1	46	4,431
Blood Circulation	127	2,111	16.62	1	54	6,893
Respiratory	212	3,214	15.16	1	49	10,493
Digestion	180	2,107	11.71	1	38	6,879
Urological	193	2,624	13.59	1	44	8,565
Pregnancy	84	588	7.00	1	23	1,920
Cuts & Hypodermic/Tissue	72	1,080	15.00	1	49	3,526
Muscular	166	1,741	10.48	1	34	5,682
Inherency Anomolies	0	0		1	0	0
Peri–natal	0	0		1	0	0
Symptoms & non–indicative	0	0		1	0	0
Traumatic	51	566	11.10	1	36	1,848
Total	1,397	18,872	13.51	1	44	61,614

Combined Karajal & Zhairem (day care) after efficiency changes

	Admissions	Bed–days	ALOS	Complicacy Factor	Cost per Admission	Total Cost
Infection & Parasitic	189	3,062	16.20	1	79	14,994
Cancer & Neoplastic	0	0	0.00	1	0	0
Endocrinopathy	5	74	16.52	1	81	364
Blood & Homogenic	0	0	0.00	1	0	0
Psychiatry	0	0	0.00	1	0	0
Nervous & Sensority	87	1,222	13.99	1	69	5,982
Blood Circulation	114	1,900	16.62	1	81	9,305
Respiratory	191	2,893	15.16	1	74	14,166
Digestion	162	1,896	11.71	1	57	9,286
Urological	174	2,361	13.59	1	67	11,563
Pregnancy	76	529	7.00	1	34	2,592
Cuts & Hypodermic/Tissue	65	972	15.00	1	73	4,760
Muscular	149	1,566	10.48	1	51	7,671
Inherency Anomolies	0	0	0.00	1	0	0
Peri–natal	0	0	0.00	1	0	0
Symptoms & non–indicative	0	0	0.00	1	0	0
Traumatic	46	509	11.10	1	54	2,495
Total	1,257	16,985	13.51	1	66	83,179

Table A.7

Combined Karajal and Zhairem Polyclinic Visits

	1993 Experience		After Efficiency	
	Nos Visits	Total Cost	Nos Visits	Total Cost
GP	42,534	119,201	42,711	179,546
Surgeon	23,259	65,183	23,356	98,182
Obstetrics	11,688	32,755	11,737	49,338
Pedetrician	43,406	121,645	43,587	183,227
Citus & Veneral Disease Specialist	14,117	39,563	14,176	59,591
Teeneger Specialist	4,990	13,984	5,011	21,064
Tumor Specialist	435	1,219	437	1,836
Harcology Specialist	3,854	10,801	3,870	16,269
Psychiatrist	4,889	13,701	4,909	20,638
Physiologist	5,845	16,381	5,869	24,673
Endoctrinilogist	8,744	24,505	8,780	36,910
Cardiologist	0	0	0	0
Neuropathalogist	0	0	0	0
Urologist	0	0	0	0
Contagienist	0	0	0	0
Dentist	25,416	71,228	25,522	107,287
Total	189,177	530,166	189,965	798,561

APPENDIX B

ANALYSIS OF ACTIVITIES OF THE HEALTH CARE FACILITIES IN THE ATASOU-JAIREM FREE ECONOMIC ZONE

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1. INTRODUCTION

The worsening of the economic situation in the country with continuing decay of production and reducing budget incomes makes it impossible to execute the direct indexation of the health care financing. The society stands before the problem of both the attraction of the additional assignments for the health care and more rational use of the existing means. It is mandated medical insurance (MMI) that will promote the solution of these two problems.

The site of the Atasou-Jairem free economic zone (А-Ж СЭЗ/ A-Zh FEZ) have become the first polygon for the implementation of MMI. For the first time in Kazakhstan this territory have transferred to the new forms of economic activity. The new methods of the rational use of the material and man-power resources were accumulated here.

There is no surprise that the health care in this economic zone for the first time in Kazakhstan have transferred to MMI. That is why the skill accumulated here is the subject of special interest. It will help to avoid some mistakes and to lay down the plan of the further implementation of the MMI in Kazakhstan.

The goal of this investigation was to study the skill and evaluation of the effectiveness of the territorial medical organization (TMO) and also to work out the recommendations for the improvement of the effectiveness of the local health care system.

2. SOURCES OF INFORMATION AND METHODS

In this investigation we used the commonly accepted methods of comparison and standardization of the conditions. However, the deepness of the investigation was partially limited by the existing system of the collecting of the medical general statistic data. For example, to evaluate the cost of the care only the averaged cost of one bed-day in the hospital department regardless of the heaviness of the disease and the necessary amount of the medical treatment and prophylactic measures. For our analysis the surgical, therapeutic and gynecological departments of the obstetrical-hynecological hospital of Karazhal were taken into consideration.

For the comparison the general medicinal statistics was used obtained from the standard report forms and the excerpts of the statistical department for 1990-993 yy.

To compare the activities of the various department of the hospital we for the first time proposed the so-called index of effectiveness of the bed-days that means the number of the cured patients per one thousand of bed-days.

3. MAIN RESULTS

3.1. Evaluation of the activities of the therapy department

Some diseases were excluded from the comparison because of the technical reasons (the specialist responsible for the data collecting have left and some kinds of diagnoses were not made). Besides we used accepted in TMO adaptation of the DRG-9, though it may be arguable according to some methodological reasons.

3.1.1. Investigation of the general structure of diseases on the therapeutic department depending on the cost of the cure course

Taking into account that from all the presented data we used for analysis only the mean cost of one bed-day, we took into consideration that only mean length of inpatient stay in the hospital determines the total cost of the medical care in the hospital.

The data presented for analysis were divided into the three groups depending on the mean length of inpatient stay in hospital:

1-st group	mean period <15 days
2-nd group	mean period =15-20 days
3-rd group	mean period >20 days

The primary evaluation of the diseases over each of the above groups reflects the increasing complication and cost of the treatment and diagnostic measures. The structure of expenses over these groups (see Fig.1) in general coincides with the one of the financial revenues (see Fig.2).

From the Table 1. one can see the strict tendency to the decreasing of the total number of the inpatients who have been cared despite of the same number of the hospital beds.

Table 1. The number of patient hospitalized in the therapeutic department

	1990	**1991**	**1992**	**1993**
1-st group	578	601	435	439
2-nd group	169	177	147	111
3-rd group	82	59	49	48

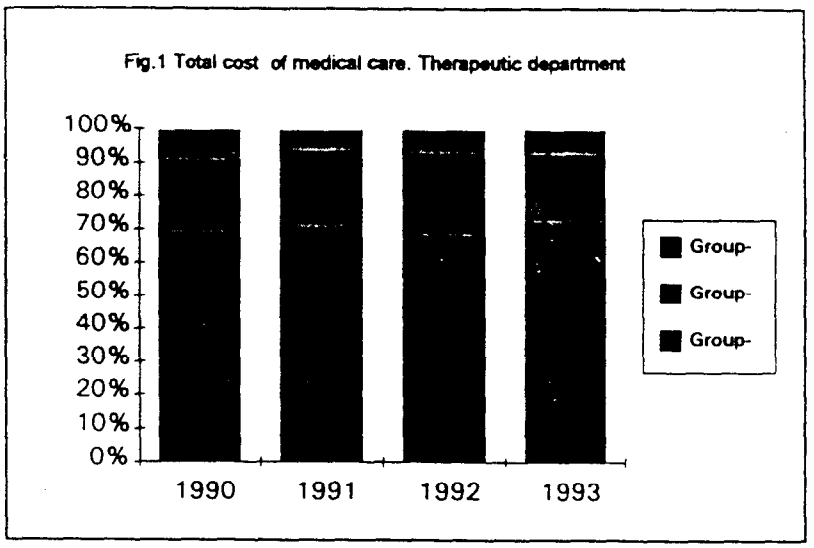


Fig.1 Total cost of medical care. Therapeutic department
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1990
1991
1992
1993
Group-
Group-
Group-

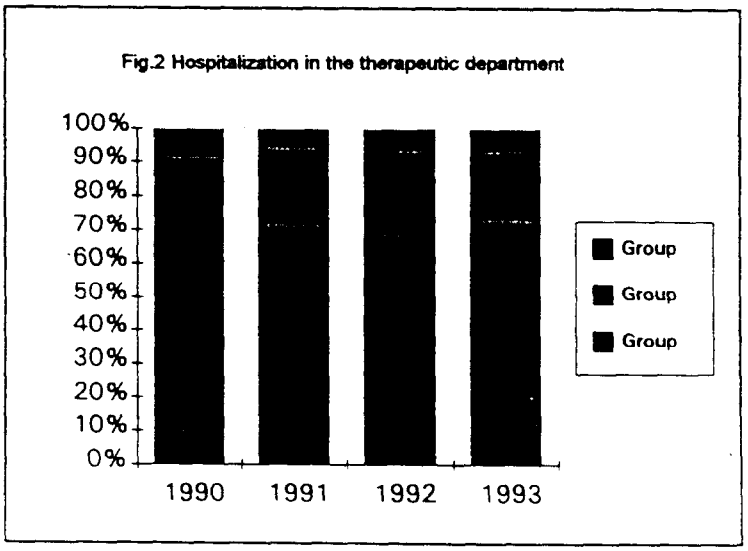


Fig.2 Hospitalization in the therapeutic department
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1990
1991
1992
1993
Group
Group
Group

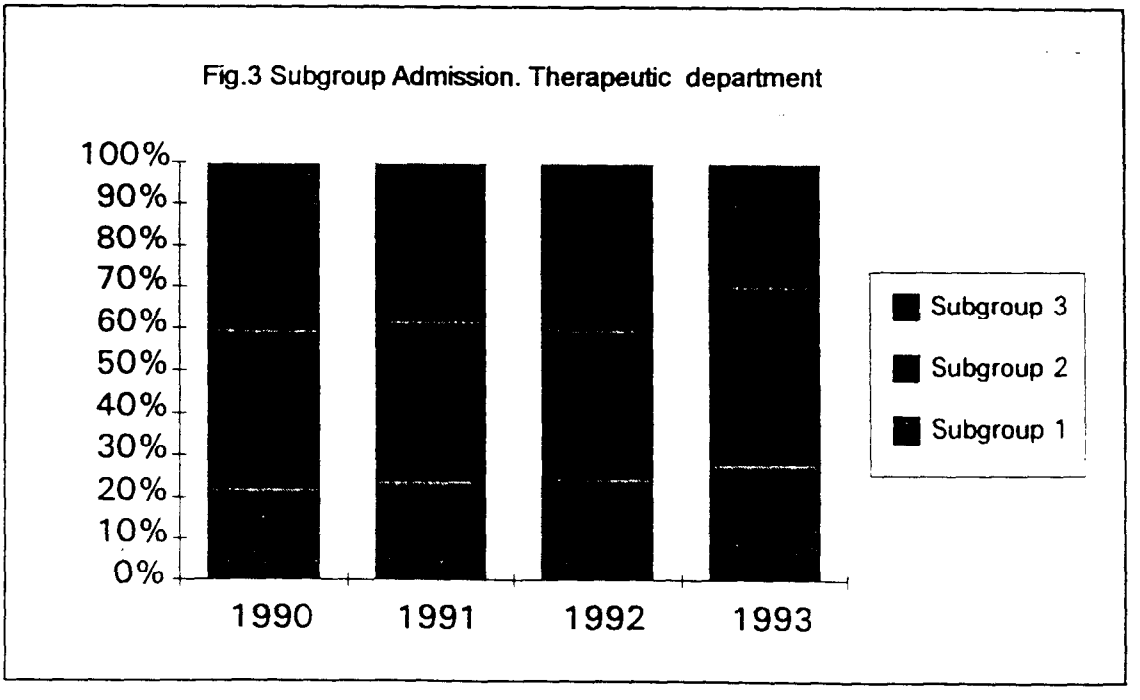
Taking into account the last resource-saving trends, namely—the increasing part of the outpatient care we attempted to evaluate the possibility to transfer the medical care of all the three selected groups to the primary stage—polyclinic. The character of diseases of the 2-nd and 3-rd groups stipulates only hospital (inpatient) care. Some part of diseases of the 1-nd group it is possible (according to specialists' opinion) to cure in the polyclinics, especially taking into consideration that the number of the 1-st group patients varies between 69% and 73% of all the cared patients over the analyzed years .

3.1.2. The Investigation of the structure of the diseases inside the groups in the therapeutic department

Taking into account non-uniform character of the cared patients in the therapeutic department the three sub-groups were formed from the point of view of transferring of their care from the hospital to polyclinic (see Fig.3 and Table 2).

Table 2. The absolute number of the hospitalized patients over the sub-groups of the therapy department

Subgroup	1990	1991	1992	1993
1	129	145	108	124
2	209	219	147	180
3	240	237	180	135



The patients of the first subgroup were cared in the therapeutic hospital (these were the patients with mental diseases and acute respiratory viral infections). Almost all these patients could be excluded from the inpatient care in this therapeutic department. If some patients with mental diseases are to be hospitalized they would be cared in the conditions of the specialized hospitals at the oblast's center: if the hospitalization is not necessary at all - the observation and treatment in the polyclinic near the place of residence is recommended.

The patients with the acute respiratory viral infections (with the exception of cases of aftereffects caused by illness) are to be cared in the polyclinics. Unfortunately the presented data were not sufficient to solve the problem of the expediency of the hospitalization of such a patients. Nevertheless if only a some part of these patients was to be hospitalized—all the patients with the acute respiratory infections might be included in the third subgroup.

The second subgroup included the following diseases: pneumonia, chronic bronchitis, infection diseases of the kidneys and urine paths. That group of patients might be potentially cared in the polyclinic conditions or in the hospitals in the period of aggravation with the further final medical treatment in the polyclinic conditions. The absolute values over the subgroups are shown in the table 2.

The third subgroup included all the other diseases, that required only inpatient care.

3.2. Evaluation of the activities of the surgical department.

Analyzing the structure of the groups of patients who have been cared in the surgical hospital one can pay attention to the prevalence of the groups with bone fractures. That is why the patients fractures were separated into one more group. Besides the group of patients with bone fractures were intermediate one (on the length of stay in hospital). So the following three groups were formed of the surgical patients according to the mean length of stay in hospital (and hence according to the cost of care, see Tables 3 and 4):

1 group— < 15 days in hospital (mean period varied from 8 to 10.8 bed-day).

2 group— fractures. Mean period in hospital 14.7 days.

3 group— diseases requiring mean period in hospital more than 15 days.

Table 3. The number of the hospitalized patients in the surgical department

	1990	1991	1992	1993
1-st group	137	153	156	152
2-nd group	153	141	130	90
3-rd group	51	54	61	54

One can observe in 1993 y. the stable tendency to the increasing of the relative number of the "cheap" and "expensive" diseases as compared with the "intermediate" ones (by the cost of care) with the simultaneous general decrease of the number of patients who have been cared. One can also obtain both absolute and relative decrease of the number of patients with bone fractures — from 153 in 1990 to 90 in 1993.

Because of the absence of the more detailed information about the structure of the fractures and other diseases we can't show the potential of the development of the surgery in the outpatients' clinic and hence the possibility to decrease the expenses for the inpatient care.

3.3. The evaluation of the activity of the gynecological department

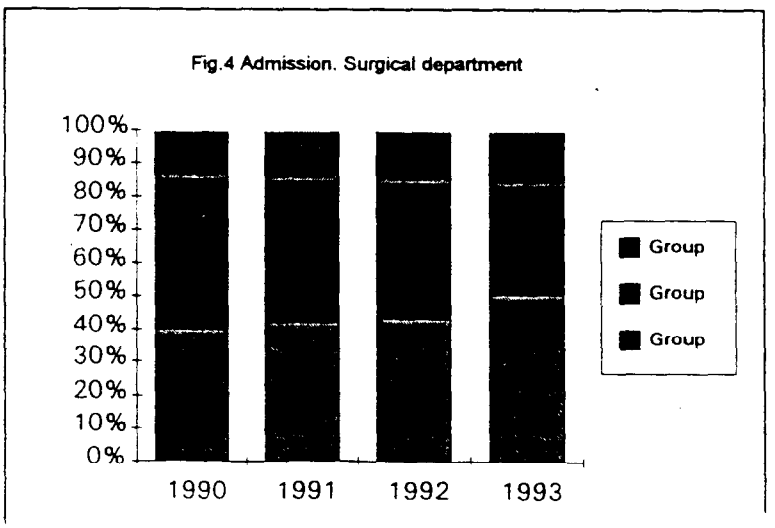
We have got for our analysis the data for 1990 and 1993 y. In general all the gynecological diseases were grouped into four classes (see Table 4.):

- inflammatory diseases
- hormonal diseases
- surgical abortions
- others

The structure of admission is presented in Fig. 5

Table 4. The number of hospitalized patients in the gynecological department

inflammatory diseases	1990	1993
hormonal diseases	99	89
surgical abortions	29	27
others	87	130



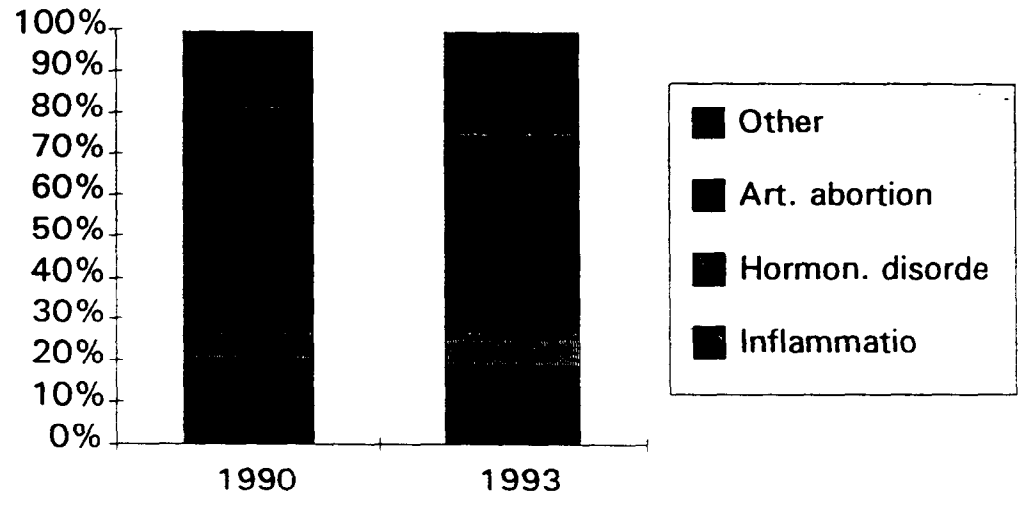
Comparing the data for the last two years one can observe both absolute and relative decreasing of the number of the surgical? abortions. Really the number of abortions decreases by 57 cases (or by 21%) as compared with the base period. This tendency is not clear yet because when the situation economy worsens it would be expected to observe: i) the increase the number of the medical abortions, even if by the social reasons ii) and also the worsening of the level of the family planning service and measures (all kinds of contraceptive means) as compared with 1990 y.

Nevertheless the decrease of the number of medical abortions by 10% would allow to save in our hospital (10%·57·2011 roubles=11463) almost 11.5 thousand roubles in the prices of 1993 year.

Both relative and absolute increase of these diseases because of the increase of the spontaneous abortions and the threat of the pregnancy interruption also deserve the special attention.

The general worsening of the economic situation and living conditions, worsening of dietary structure results in the situation when the female organism became less and less prepared for the pregnancy and more often before the natural end of the pregnant period. So at the same number of population one can observe the increase almost by three times of the spontaneous abortions and increase by 1.5 times of the threat of pregnancy interruption.

Fig. 5 Admission. Gynecological department



4. Conclusions and recommendations

4.1 By the internist department

4.1.1. Relative to the first subgroup of the internist department

The increase of the total number of the bed-days occupied by the mental patient 272 in 1990 to 495 in 1993 reflects the increase of the disproportion in the rational use of the existing means. Such a patient can get valuable medical care only in the specialized hospitals in the oblast's center, but not in the therapeutic department of the raionic hospital.

The exclusion of inpatients of this subgroup from the inpatient care and their transferring to the specialized hospital in the oblast's center would allow to save (495 bed-days*1001 rouble=495495)—almost half a million of roubles in the prices of the 1993 year for the hospital. Undoubtedly, for the care of these patients in the oblast's center some sums of money is to be spent but the effectiveness of the use of these sums would be better. Besides the care of these patients will be carried out for the account of the oblast's budget of for the account of the specialized fund unloading the local budget of the MMI.

If the outpatient care for such patients will be organized in the Karazhal—then taking into account small number of the patients who have been cared (43 patients in 1993) it would be possible to introduce in our staff the 0.25 wage unit of the psychiatrist or other specialist on mental and nervous diseases. And these expenses will be considerably less than the expenses for the inpatient care of such a patients.

The full transferring of the care of the patients suffering from the acute respiratory infections to the polyclinic is impossible because of the aftereffects caused by such an illnesses. Nevertheless, the transferring of a such single patient to the polyclinic will allow to save approximately: 8983 roubles - 3*cost of one visit to physician = 8983-(1.65*500)*3=6508 roubles, where:

sum of 8983 roubles is a cost of inpatient care

3 -- the number of physician visit per one case of the respiratory infection.

So, the possible economy would be equal to more than half million roubles (81 - the number of hospitalized respiratory patients)

4.1.2 Relative to the second subgroup in the internist department

The ways of the improvement of the situation with the therapeutic patients are shown in the Chapter 3.1.2. If we suppose that at least 50% of means could be saved for the account of this group—this figure will be equal to: 3043 bed-days*1001 rouble*50%=1,523,022 roubles*). The organizing of the additional supervision by the territorial physician (2-3 visits) will not require significant expenses (180 cases*3 visits*5 roubles=2,700 roubles).

So, if the patients of the 1-st and 2-nd subgroups will be transferred to the polyclinic—that will lead to the economy of more than 2 millions of roubles.

*) possible miscalculation

4.2. Surgical department

Because of the absence of the more detailed information about the structure of the burns, fractures, holecystitis, suppirations and other diseases it seems impossible to show the potential opportunities to develop the surgery in the polyclinic (that would lead to the lowering of the expenses for the inpatient care of the surgical patients).

4.3 Gynecological department

The prevalence of the medical abortion in the structure of admission one more time demonstrates the low culture and knowledge of population about the question of family planning.

If the number of unexpected (unplanned) pregnancies could be reduced even not to the numbers specific for the developed countries but at least by 50% of the existing level—this will result in the saving of the means of health care more than 200,000 roubles (126 cases*2011roubles*50% =217,188 roubles*)). Beside the direct cost of the medical care for such a patients the economy in general suffers of indirect losses resulted from the absence of such a patients at their work. In this situation it is strictly recommended to enlarge the role of the family-planning rooms and sanitary-information activity. The cost of these measures will be less (approximately by hundreds times) than the cost of the care for such a women.

For women, whose pregnancy is planned by themselves, and expected child is desirable—one can recommend the development of a system of addressed care in the women consulting clinic in the form of the personal food assistance. This food assistance might be given in the definite period of pregnancy (more significant for child) or for women with very low incomes. The cost of such kind of assistance can't be calculated here because of the variable set of foodstuffs, but the effectiveness can be evaluated not only by the lowering of the disease level and healthy children. This measure will allow partially to reduce new current tendency of the increasing of the number of the pregnancy and childbirth aftereffects, and afterbirth aftereffects and also increasing of the infant mortality (till 1 year).

*) possible miscalculation

5. Evaluation of the effectiveness of the transference of part of the beds to the regime of the daytime hospital

According to the TMO-economists' calculations the costs of the patient care in the daytime hospital is equal only 75% of the cost of the inpatient care. This allowed in 1991 to increase significantly the number of bed-days (at the same number of beds—200): from 65059 to 87752—by the factor of 1.35 (66885 + 20867). How can this fact be considered as the positive or the negative one?

In the Table 5 the procedure is presented of evaluation of the effectiveness of the bed-days over the groups of diseases in all the departments being analyzed—resulted in the number of the conventionally cared patients at the same number of the hospital beds.

According to the obtained data the number of the conventionally cared patients in the therapeutic department decreased in 1992 as compared with the previous period and will slightly stabilize in the next year, The data on the surgical and gynecological departments clearly show the decrease of the effectiveness of their work.

Summary

The activities of the therapeutic, surgical and gynecological department of the Karazhal hospital were analyzed. The definite reserves and ways of lowering of the expenses were found out.

For the first time the new methods of evaluation of the effectiveness of the bed-days is proposed.

Document includes 5 charts and 5 tables.

Table 5. Calculation of the effectiveness of the bed-days

Effectiveness of the bed-days				
Department	**1990**	**1991**	**1992**	**1993**
Therapeutic department				
Group 1(coeff)	1.4(1.00)	59.8(1.00)	73.0(1.00)	68.0(1.00)
Group 2(coeff)	58.7(1.22)	57.7(1.04)	62.0(1.17)	58.1(1.17)
Group 3(coeff)	44.9(1.59)	39.5(1.51)	40.2(1.82)	37.8(1.80)
TOTAL	64.8	57.3	66.1	62.0
Actually/conventionally cared patients				
Group 1 (1.00)	578/578	601/601	435/435	439/439
Group 2 (1.15)	169/194	177/204	147/169	111/204
Group 3 (1.68)	82/138	59/99	49/82	48/49
	829/910	837/904	631/686	598/742
Surgical department				
Group 1(coeff)	101.2(1.00)	84.67(1.00)	95.71(1.00)	105.30(1.00)
Group 2(coeff)	68.15(1.49)	69.68(1.21)	69.00(1.38)	80.65(1.31)
Group 3(coeff)	58.55(1.73)	59.87(1.41)	60.64(1.57)	60.00(1.76)
TOTAL	76.36	73.67	76.77	85.57
Actually/conventionally cared patients				
Group 1 (1.00)	137/137	153/153	156/156	152/152
Group 2 (1.35)	153/206	141/190	130/175	90/121
Group 3 (1.62)	51/83	54/87	61/99	54/87
	341/427	348/430	347/430	296/361
Gynecological department				
Inflammatory diseases	66.27(1.00)			67.84(1.00)
Hormonal disorders	81.69(1.23)			71.05(1.05)
Medical abortions	498.2(7.52)			497.7(7.34)
Others	79.67(1.20)			80.30(1.18)
TOTAL	139.9			123.4
Actually/conventionally cared patients				
Inflammatory diseases (1.00)	99.99			89/89
Hormonal disorders (1.14)	29/33			27/30
Medical abortions (7.44)	273/2028			216/1604
Others (1.19)	87/104			130/155
TOTAL	488/2264			462/1878

APPENDIX C

Efficiency Analysis of the activity of Health institutions in Karajal in the conditions of reformation of the medical assistance provision for population

Any kind of Health care reform pursues the certain objects. One of the most important objects is the increase of effectiveness of the Health care provision by increasing the efficiency of the medical staff work, creation of the optimal forms of medical assistance provision and the rational usage of Health care resources.

Beginning from 1991 the experiment on the reform of the medical assistance organisation is going on. It is possible to divide it on two stages: implementation of the New Economical Mechanism and implementation of the Mandatory Health Insurance.

It was logically to assume that implementation of innovations would lead to the certain changes in the efficiency of work of the medical-prophylactic institutions in Karajal. With the purpose to show up these changes the analysis of their work has been carried out. The work of therapeutic, surgical and gynaecological departments of Karajal hospital and Karajal polyclinic has been studied.

The most important event of the first stage (NEM implementation) of the Health Reform experiment was the establishment of Obstetrical-Paediatric - Therapeutics Complexes (OPTC) with the transferring to them the main part of the funds. The main objective of this reorganisation was the transmission of the more expensive inpatient care to the polyclinic where the cost of the medical assistance is essentially lower. OPTC as a funds holder is economically interested to provide more medical assistance in a polyclinic and use all saved money for its own needs. They have intended to increase the number of the home visits and decrease the number of admissions. In the real situation occurred the following: the visits increase in 1992 to 1380 per 1000 population against 919.9 in 1990 with the increase of the share of calls (30 calls per 1000 population in 1990, 43.8 in 1991 and 73.2 in 1992). The number of admissions in these three years was on the same level and varied from 315.4 per 1000 to 312 per 1000 population.

OPTC implementation had to change the structure of the patients in the hospitals to the direction of increasing the patients with the complicated diseases and decreasing the patients with the light forms of pathologies which might be treated out-patient.

The results of the conducted analysis have shown that there were no significant changes in the structure of inpatient cases. The share of the "light" diseases like acute respiratory diseases, chronic bronchitis, cholecystitis, diabetes stayed almost on the same level (data in the Table 1) in 1990 and 1991 years. In 1992 the picture changed - the share of acute respiratory diseases in the structure of inpatient cases essentially decreased and it may be explained by

the optimal work of the NEM which was properly adjusted by this time. Almost the same picture was in the surgical department (Table 2).

Considering the effectiveness we have to study the efficiency of work. The analysis has shown that in therapeutic as a whole occurred the reduction of work efficiency from 63.8 admissions per 1 medical worker in 1990 to 73.4 (???) in 1993 i.e. reduction of the volumes of work in the hospital as a result of NEM implementation doesn't lead to the reconsideration of the medical personal number. Almost the same picture was in the surgical and gynaecological departments. In the surgical department it reduced from 18 in 1990 to 15.6 in 1993, in gynaecological - from 20.3 to 18.5.

Implementation of the Mandatory Health Insurance began in Karajala in 1993 and the practice of transferring funds to OPTC was ceased. The insurance company began to settle with LPU(?) reckoning the number of days the bed was occupied and the number of the visits to polyclinic. It immediately affected the effectiveness of city's LPU and in particular the number of the visits to polyclinic has been reduced (the polyclinic became uninterested in resources saving and start to direct the patients to the hospital) 1147.9 visits per 1000 population against 1380 in 1992. The length of stay in the hospital for all inspected departments also increased.

On the base of conducted analysis it is possible to make the following conclusions:

1. Implementation of the New Economic Mechanism with the funds transmission to the polyclinic link has the positive influence on the activity of out-patient services, it is improving the effectiveness of their work.

2. There wasn't significant influence of the NEM implementation on the hospitals' activity - the number of admissions and average length of stay decreased, but hospital's capacities was left the same and the work efficiency of the medical workers became significantly lower.

3. Implementation of Mandatory Health Insurance on the territory of Karajal and abolition of the funds' transition to the primary link had a negative influence on a LPU's work i.e. reduction of the volumes of the medical assistance provision in polyclinic.

APPENDIX D

Quality and Access
Survey Instrument
for
Administrators and Physicians

Individual_____
Position_____
Type of Service Facility____
Facility Capacity____

I am going to ask you a series of questions about possible changes in quality of care and access to care since March 1993. It is important that you be as open and honest as possible. Your individual answers will be aggregated with others to provide a statistical profile overall; the information you provide will not be used for purposes of individual attribution.

I. Structure

Supplies and Equipment

1.) Overall in this facility, has the availability of surgical supplies changed?
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

specifics:

a) pins and plates
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

b) monitoring equipment
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

c) provision of internal fixation of fractures
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

2.) Overall in this facility, has the availability of supplies other than for surgery changed?
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

what kind?

a) alcohol
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

b) cotton
1=fewer, 2=slightly less, 3=about the same, 4=more,

5=much more, 6=don't know
c) syringes
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know
d) needles
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know
e) gloves
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know
f) thermometers
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know
g) micro-slides
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know
h) other (e.g., disinfectants, disposables)
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

3.) Overall, in this facility, would you say quality and availability of equipment has changed and how?
1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know

in terms of specific support services:

a) radiological equipment
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know
b) spare parts
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know
c) x-ray film
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know
d) contrast medium
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

e) in terms of other diagnostic equipment
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

f) in terms of pathology services, and reagents
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

Pharmaceuticals

4.) Overall, in this facility, would you say quality and availability of pharmaceuticals has changed and how?

1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know

a) antibiotics
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know
b) vaccines
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know
c) aspirin
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

d) overall, in terms of availability of critical supplies (e.g., antibiotics)
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

can you provide specifics in terms of level of changes?

e) overall, in terms of availability of other less-critical pharmaceuticals (e.g., aspirin, asthma medicines
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

can you provide specifics in terms of level of changes?

f) overall, in terms of appropriate prescribing of medicines for a specific illness?
1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know

Other

5.) What other activities have occurred to change or improve quality of care?

in terms of personnel
a) more appropriate numbers of staff (either up or down)
1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know
b) better mix of staff, improved team activity
1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know
c) more training programs for staff
1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know
d) improvement of professional knowledge

1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know

can you provide specifics?

d) have you introduced other Quality Assurance activities?
(example:
elements of an infection control policy covering, such as
microbiological monitoring
sterilization techniques
use of disinfectants
disposables
monitoring system)

6.) Any Additional Comments or Expectations for the Future?

II. Process (for Hospitals only)

7.) Would you say that the utilization of acute care services has changed?
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

can you be specific in terms of what and how much change there has been

in terms of other classes of services?

a) surgical
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

b) diagnostic
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

c) other
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

8.) Would you say that the number of inappropriate inpatient admissions (example: easy surgeries) has changed?

1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

can you provide specifics?

9.) Would you say that the percentage of appropriate referrals has changed?

1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

can you provide specifics?

10.) Would you say that the duplication of tests has changed?

1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

can you be specific in terms of what and how much change there has been

11.) Would you say that the waiting time for lab tests has changed?

1=much worse, 2=slightly worse, 3=about the same, 4=better,

5=much better, 6=don't know

can you be specific in terms of what and how much change there has been

12.) Overall, has average number of days per stay changed?

1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

can you provide specifics in terms of diagnostic areas or types of patients?

13.) Would you say that patients have been discharged too early in greater numbers?

1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

can you provide specifics?

14.) Would you say that the percentage of deviations of the pathologic diagnosis versus the clinical diagnosis has changed?

1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

can you be specific in terms of what and how much change there has been?

II. Process (for Polyclinics Only)

7.) Would you say that the utilization of preventive services (e.g., immunizations, screening) has changed?

1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

can you be specific in terms of what and how much change there has been?

8.) Would you say that the waiting times at the reception desk have changed ?

1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know

in terms of

a) physician's office waiting times
1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know

b) laboratory and other tests
1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know

can you be specific in terms of what and how much change there has been

9.) Would you say that the number of cancer cases in stage 3 and stage 4 has changed ?

1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

can you provide specifics?

10.) Would you say that the number of aggravated forms of tuberculosis has changed ?

1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

can you provide specifics?

11.) Would you say that the percentage of chronically ill patients being constantly monitored has changed?

1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

can you be specific in terms of what and how much change there has been

12.) Would you say that the percentage of different diagnoses for the same patients in polyclinics versus hospitals has changed?

1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

13. and 14. SKIP

MOVE TO NUMBER 15 ON NEXT PAGE

III. Overall ("Outcomes")

15.) Overall, in this facility, would you say quality for surgeries has changed since March 1993 and how?

1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know

can you provide more specifics in the way of the level of change and the factors which are responsible for the change?

16.) Overall, in this facility, would you say quality for medical therapies (everything not surgically related) has changed since March 1993 and how?

1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know

can you provide more specifics in the way of the level of change and the factors which are responsible for the change?

17.) Overall, then, in this facility, would you say quality has changed since March 1993 and how?

1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know

18.) Are there other things which might be done to improve quality of care, and what are they ?

IV. Access to Care

I am now going to ask you a series of questions about possible changes in access to care since March 1993.

19.) Overall in this facility, has the number and availability of services changed?
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

for/by specific types of patient groups:

a) rural populations
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

b) poor and unemployed
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

c) upper-income groups
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

d) elderly (say, 65 years and older)
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

e) women and children
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

f) disabled
1=fewer, 2=slightly less, 3=about the same, 4=more, 5=much more, 6=don't know

20.) Overall, in this facility, would you say access to care has changed since March 1993 and how?

1=much worse, 2=slightly worse, 3=about the same, 4=better, 5=much better, 6=don't know

can you provide more specifics in the way of the level of change and the factors which are responsible for the change?

21.) Are there other things which might be done to improve access to care, and what are these?

Answers Guide

"A"

1=fewer

2=slightly less

3=about the same

4=more

5=much more

6=don't know

"B"

1=much worse

2=slightly worse

3=about the same

4=better

5=much better

6=don't know

APPENDIX E

APPENDIX E
SCOPE OF WORK

Technical Assistance in Health Financing to the Republic of Kazakhstan
Health Financing and Sustainability Project

Introduction

The Health Financing and Sustainability (HFS) project is to provide short-term technical assistance to the Ministry of Health (MOH) of the Republic of Kazakhstan in the area of health financing, economics, and management. The following statement is the agreed upon scope of work for the technical assistance. Agreement on the scope of work was reached among representatives of the MOH, USAID/Almaty, and HFS in December 1993.

The technical work is expected to be performed in the month of April 1994, following elections for a new Supreme Soviet (March 7, 1994) and the resumption of transport access to the Oblasts where the work is to be performed, as winter ends. Following the return of the technical assistance personnel to the U.S., they will make their report final (a draft will be left in country). The final report will incorporate comments from the MOH, local health authorities, USAID/Almaty, the New Independent States (NIS) Task Force, and technical staff of the HFS project. Once the report is final and has been translated into Russian, a workshop will be conducted in Kazakhstan to disseminate the outcomes of the technical work. This workshop will discuss the methods used in conducting the technical work, the findings of the analyses, and recommended options for policy.

The work is to be conducted collaboratively, involving external experts and Federal MOH and Oblast-level personnel working as a team. HFS expects to provide two experts in health economics and management for about three to four weeks for data collection and analysis work and at least one representative of the Federal MOH and one or two personnel from each of the involved Oblasts are expected to work full-time on the assignment. Later this members of this team will present the work at a technical workshop. This collaboration is intended to transfer skills and experience and ensure that the work benefits from the complementary knowledge of external and national personnel.

The planned work is intended to be complementary to technical assistance planned to be provided to the Federal MOH through a World Bank loan. The World Bank's assistance is to be concentrated at the Federal policymaking level. A one-year resident advisor and some short-term consultants are to be provided by the Bank program. The HFS work will take place at the Oblast level, providing analysis and findings from field experiences that will feed into the Federal policymaking.

Background

Health Insurance Law. The Government of the Republic of Kazakhstan (GORK) has submitted to the Supreme Soviet of Kazakhstan a proposed health insurance law. This law is being considered by the current national legislature (the legislature is called the Supreme Soviet, but its name is to be changed soon), failing passage now it may be enacted by decree or held for re-submission to the next session of the legislature, following the March elections. Even before passage of the law however, some initiatives have begun to test the systems to be used under the insurance system. These initiatives are taking place or planned in the Oblasts of Dzheskasgan, Chimkent, Karaganda, Kokchetau, and Uralsk. Key features of the initiatives in Dzheskasgan, Chimkent, and Karaganda are summarized below.

Problems. The insurance system is expected to help address several problems in the Kazakhstan health system. These problems include: adequacy of resources available to pay for health services, efficiency, and quality of care. A strength of the current system has been the relative equity of access by population groups to health services. The insurance system would seek to maintain this strength.

A low and declining share of Gross Domestic Product (GDP) has been allocated to health services in recent years. Rapid inflation has made it difficult for central government allocations for health services to keep up purchasing power.

There are many inefficiencies in the system, notably high ratios of doctors, nurses, other staff, and hospital beds per capita; long average length of stay (ALOS) in hospitals; emphasis on curative, rather than preventive medicine; and over-prescription of drugs (polypharmacy).

Quality of care is affected by out-dated medical practices, lack of current technology, and dilapidated facilities and equipment.

Insurance System. The proposed insurance system is to be based on financing through compulsory employer contributions of a percent of payroll to an insurance organization, which, in turn will reimburse providers for services used by the insured. The state will pay into the insurance organization on behalf of the non-employed and military. The insurance will cover a basic package of services. The package is not specified in the draft law, but is to be defined by the Federal MOH, then reviewed and modified periodically. Those individuals wishing to have coverage for services beyond the basic package must purchase additional voluntary insurance. The draft law submitted by the Federal MOH was amended by the national legislature to specify that the insurance organizations are to be one per Oblast and are to be state owned. These provisions may be dropped if the law is enacted by decree. Many other details not specified in the law are expected to be stipulated by Government decree or order, once the law is passed.

Dzheskasgan Initiative. In the Oblast of Dzheskasgan there is a special export processing zone (EPZ) in one rayon (Oblast subdivision) with a population of about 40,000 people, where an insurance system already is in place. In 1994 the system is to be implemented Oblast wide. The EPZ focuses on mining and ore enrichment. It comprises two small towns, Karazhal and Zhairem, which are located about 60 km. apart.

In the EPZ, a state-owned insurance organization is collecting the funds generated by the 5 percent payroll health insurance premium or contribution. The insurance organization uses the revenues to reimburse for care provided by the two 300-bed rayon-level hospitals, children's sanitorium (40-60 beds), and two polyclinics (utilization: approximately 500 visits per day) in the EPZ. The Karazhal hospital has somewhat more sophisticated personnel than the Zhairem hospital, so it is able to perform some surgeries not possible in Zhairem, though both hospitals are similarly equipped. The hospitals generally do not have sophisticated capabilities and complex cases must be referred elsewhere.

The reimbursements are done according to a schedule of prices corresponding to a set of approximately 200 treatment protocols. The protocols were developed by medical experts to define the minimum set of treatments, tests, and procedures needed to complete treatment of each illness. The protocols cover both inpatient and outpatient care. Payment is made by the insurance organization upon successful completion of treatment.

Facility managers have been financing their operations with the funds generated through the insurance plan, some Oblast budgetary allocations, and contributions from industrial firms. The budgetary allocations are to be phased out. Facility managers have the power to allocate the funds at their disposal largely as they wish. They are under the "Domestic Economic Accountability" rules, whereby they may pay personnel up to 70 percent more than otherwise. The managers have the authority to dismiss personnel, but have not done so because there is a relative scarcity of medical personnel in the area.

One positive result of the system reportedly has been a reduction in the ALOS of hospitalized patients. One difficulty has been to adjust the reimbursements to account for the continuing rapid inflation rate.

Chimkent Initiative. Chimkent Oblast, a relatively densely populated (approximately 1.9 million inhabitants, of which 733,000 are under 15 years of age, and 445,000 are women) industrial area (chemicals, oil refining, non-ferrous metals processing), is preparing to launch the compulsory insurance system as soon as the Federal law is enacted.

An attempt to begin compulsory insurance earlier failed when employers refused to make their contributions in the absence of enactment of the Federal law. Thus, the Oblast health authorities have a complete set of plans ready for implementation. The reimbursement system in Chimkent is to be computerized (Dzheskasgan's is manual). The Umit insurance organization has been offering voluntary (supplementary) insurance for about one year already.

Chimkent is to test how to insure agricultural populations in two rayons. The intention is to try the approach used in Estonia, where the financial contribution of family (private) farms is 1 percent of the estimated value of gross output.

Karaganda Initiative. In Karaganda Oblast, health authorities have begun allocating funds to facilities on the basis of numbers of patients seen (under the Soviet system allocations were made on the number of beds in hospitals and using similar capacity-based formulas for outpatient facilities, rather than output-based methods). This is soon to be converted to an insurance system, with the insurance organization making the allocations on an output basis.

Statement of Work

Purpose. The purpose of the assignment is to evaluate the performance of the planned and on-going tests of the insurance system in Dzheskasgan and Chimkent Oblasts. The objective of the evaluation is to formulate recommended options for modifications or complementary steps to better achieve the objectives set out for the system. The objectives for the system are to ensure adequate financing, reduce inefficiency, improve quality of care, and continue equity of access. The operation of the system must be within the administrative capabilities of the institutions involved. Thus, an element of the evaluation and a consideration when formulating options for improvements is administrative feasibility.

Specific Analyses to be Performed. The following sections describe the analyses to be performed to evaluate the insurance tests in Dzheskasgan and Chimkent. The analyses are organized according to the objectives set for the system.

1. Adequacy of Financing This analysis examines to what extent the payroll contribution and reimbursement system ensures adequate financing for the health system. It develops a tool (a spreadsheet) to perform the analysis and formulates recommendations for improved performance. It reviews actual performance in Dzheskasgan and prospective performance in Chimkent. The following are the steps in the analysis:

a. Build a spreadsheet for micro-computer to allow "what if?" calculations to be made regarding the costs and revenues expected under the insurance system. Apply the spreadsheet to data from the Dzheskasgan initiative. Set up the spreadsheet for use in the Chimkent initiative. Train local analysts in its use. Use the analyses below to generate input data for the spreadsheet. (The Federal MOH and Chimkent health authorities have IBM-type 286 micro-computers with MS-DOS 3.0. Many have Russian versions of Quattro Pro, SuperCalc, Lotus 1-2-3, or FoxPro, but little experience building and using spreadsheets for such analyses.)

b. Estimate the revenue to be generated for the insurance fund by the 5 percent payroll contribution and other sources, including State contributions for the non-employed, etc. Make various assumptions regarding employment and wage levels, etc. concerning the payroll contribution.

c. Estimate operating costs for the two rayon hospitals, children's sanitorium, and two polyclinics involved in Dzheskasgan's initiative, under various assumptions about utilization and mix of cases.

d. Review critically the methods for calculating reimbursement rates for illnesses in both Dzheskasgan and Chimkent.

e. Demonstrate, using the spreadsheet, the conditions needed for the facilities and insurance fund to break even, stating all relevant assumptions.

f. Formulate recommended options for:

- △ Adjusting reimbursements to account for inflation
- △ Modifying reimbursements and contributions to ensure adequate financing
- △ Simplifying the administrative burden of the system
- △ Other items arising in the course of the analysis

2. Reduction in Inefficiency This analysis examines the effects of the health insurance system on the efficiency of the provision of services. It examines actual performance in Dzheskasgan and prospective performance in Chimkent. It formulates options for action to improve performance.

a. Review the performance of the Dzheskasgan system to identify where it has affected efficiency. The areas affected may include personnel productivity, ALOS, use of inpatient and outpatient services, use of general practitioners and specialists, prevention, drug prescription, reduction in beds, etc.

b. Review plans for the Chimkent system to identify how it may promote or hinder the achievement of greater efficiency.

c. Formulate recommended options for modifications to each system to increase incentives for efficiency. These options may include such items as increased autonomy of management of facilities and the description of a monitoring and evaluation system to allow management and policymakers to identify efficiency problems so that they may be addressed.

3. Quality of Care These analyses examine how the system affects quality of care and formulates options to enhance the effects on quality. Small-scale surveys of provider personnel and patients may be employed.

a. Identify how the Dzheskasgan system has affected quality of care. Possibly (time permitting) conduct small-scale patient and staff surveys concerning perceived and technical quality changes before and after the institution of the insurance system.

b. Review the plans for Chimkent to identify where changes might be made to improve the effects on quality of care.

c. Perform (time permitting) small-scale surveys of medical staff and patients in Chimkent facilities to establish a baseline on quality.

d. Formulate recommended options for enhancing the incentives for quality in the systems, including, possibly, description of a monitoring and evaluations system for management and policymakers.

4. Equity of Access These analyses examine what effects the insurance systems have on the strength of the old system, relative equity of access to health services by various socio-economic status (SES) groups. The analyses involve key informant interviews and record reviews.

a. Conduct interviews of management and admissions staff and review records at Dzheskasgan hospitals and polyclinics to examine the effects of the insurance system on equity of access by SES groups, particularly the unemployed, women, children, elderly, and poor.

b. Review the plans for the Chimkent system in light of the findings from Dzheskasgan.

c. Formulate recommended options for improving equity of access under insurance to respond to any issues identified.

Outputs. Three types of outputs are expected from the work: enhanced skills and experience among Federal MOH and Oblast health staff collaborating with HFS personnel on the assignments; a report detailing the methods, findings, and recommendations of the analyses; and a technical workshop to disseminate the results of the work. These outputs are briefly described:

1. Enhanced Skills and Experience Counterparts assigned by the Federal MOH and Oblast health authorities will work in collaboration with HFS experts in conducting the analyses. The counterparts will improve their skills in framing issues for analysis, gathering and analyzing data using a variety of sources, and formulating options for action as a result. The counterparts also may take roles in assisting with report writing and presentation of results at the technical workshop.

2. Report The report from this assignment will be roughly drafted before the HFS experts complete their data collection and analysis visit. The draft report will be made final following a period allowed for receipt of comments from the Federal MOH, Oblast authorities, USAID/Almaty, and the NIS Task Force. The report also will benefit from input from HFS staff in Bethesda. The report is expected to include the following:

- Executive Summary
- Background
- Methods
- Findings
- Recommended Options for Action
- Conclusions and Directions for Additional Analysis

3. Technical Workshop Following the completion of the final draft of the report, one or more HFS staff will return to Kazakhstan to work with counterparts to prepare and conduct a technical workshop for Federal MOH and Oblast health representatives, representatives of other relevant Ministries (e.g., Economy and Finance), representatives of the Supreme Soviet health protection committee, donor representatives (e.g., USAID, World Bank, UNICEF, WHO, European Community), and, possibly, representatives from Health Ministries of other countries in the region. The workshop will present for discussion the methods used in conducting the analyses, the findings, the recommended options for action, and the relevance for policy. The workshop may be broken up into different sessions to accommodate the interests of the various audiences.